



FCC Environment

Pen-Y-Bont Landfill, Chirk

ECOLOGICAL APPRAISAL

August 2018

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Rev	Issue Status	Prepared / Date	Reviewed / Date	Approved/Date
	Final	EMW / 16.08.18	NJL / 17.08.18	JSE / 17.08.18
	Rev 1	EMW / 21.08.18		JSE / 21.08.18

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1.0 INTRODUCTION

- 1.1 FPCR Environment & Design Ltd (FPCR) were commissioned by FCC Environment to undertake an Ecological Appraisal of land at the former Pen-Y-Bont landfill, near Chirk in north Wales (central Ordnance Survey grid reference: SJ 29261 41514), to inform a planning application for a new residential development.
- 1.2 The survey aimed to identify any ecological features within or near the area proposed for development, that could potentially form a constraint to the proposals, and to inform any recommendations for further survey and/or mitigation. The area was surveyed on 22nd May 2017 by an experienced Ecologist, and the survey was undertaken in accordance with current industry guidelines. During 2017, the area formed part of wider area within the same ownership, which was surveyed for protected species. Surveys were completed in 2018. To enable distinction between the proposed development area and the wider survey area, the former is hereafter referred to as the Site and the latter as the survey area.
- 1.3 This report has been produced with reference to current guidelines for preliminary ecological appraisal¹ (CIEEM, 2017) and BS42020:2013: Biodiversity - Code of Practice for Planning and Development.

Site Location and Context

- 1.4 The Site, which is just under 3 hectares in size, is located to the north of the small town of Chirk in Denbighshire, North Wales, close to the Welsh-English border. It comprises the yard of the old landfill site, with large areas of hardstanding and associated landfill buildings and equipment still present. The Border Tachograph Services Ltd. building is also located at the southern end. During the original extended Phase 1 Habitat Survey in 2017, the Site was found to contain a small earth mound at the north, supporting ephemeral vegetation. During 2018 fieldwork this was noted as having been flattened and the vast majority of vegetation was no longer present. In addition, some of the stored ex-landfill equipment noted in 2017 was no longer present in 2018.
- 1.5 The old landfill workings are situated to the immediate north-west of the Site and have a separate restoration permission. Currently the workings, which were not included in the surveys, comprise a large earth mound that is being colonised by vegetation. Areas of woodland and agricultural land are located within the immediate surrounds of the Site, blocks of woodland are present to the west, and beyond the landfill workings to the north, The River Dee loops around these adjacent habitats, enclosing them and the Site to the north, east and west. A large block of woodland lies beyond the river. The wider landscape is primarily agricultural, with blocks of woodland, particularly along the River Dee corridor, and built areas/settlements further to the north and west.

Development Proposals

- 1.6 Current proposals are for clearance of the Site and construction of a small number of new residential dwellings. The existing road/track that runs north through the Site will be resurfaced to provide access to the new housing from the B5065, with additional smaller access roads leading off this. Each new dwelling will have a garden, and these will provide some connectivity through

¹ CIEEM. (2017). *Guidelines for Preliminary Ecological Appraisal - 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

the development. Tree planting is proposed throughout the scheme. Current development proposals include potential incidental open space at the south and north of the site. It is understood that there is a strong preference to utilise space at the north, comprising the closed & restored landfill area for this purpose, rather than the land to the south.

2.0 METHODOLOGY

Data Consultation

- 2.1 In order to compile existing baseline information, relevant ecological data was requested from North Wales Environmental Information Service (cofnod).
- 2.2 In addition, the following resources were checked for additional information and context:
 - Multi Agency Geographic Information for the Countryside (MAGIC) website²;
 - Colour 1:25,000 OS base maps³; and
 - Aerial photographs from Google Earth⁴.
- 2.3 The search area for biodiversity information was related to the significance of sites and species and potential zones of influence, as follows:
 - 5km around the Site for sites of International Importance (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites);
 - 2km around the Site for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSIs); and
 - 1km around the Site for sites of County Importance (e.g. Sites of Importance for Nature Conservation (SINC)/ Local Wildlife Sites (LWS)) and species records (e.g. protected, Local Biodiversity Action Plan (LBAP) or notable species).

Flora/Habitats

- 2.4 Survey methods followed the standard Phase 1 Habitat Survey technique⁵. This involved a systematic walk-over to identify and map the broad habitat types present within the Site. A list of plants present within each habitat was also made, and the relative abundance of each species within these habitats recorded using the DAFOR scale.
- 2.5 Any Habitats of Principal Importance (HPI) for the conservation of biodiversity as listed under Section 7 (S7) of the Environment (Wales) Act 2016 (see Appendix A) and any Wrexham Local Biodiversity Action Plan (WLBAP) priority habitats that were present on or adjacent to the site were also recorded during the survey.

² [Online]. <http://magic.defra.gov.uk/>

³ [Online]. www.ordnancesurvey.co.uk

⁴ [Online]. www.maps.google.co.uk

⁵ JNCC, (2010), *Handbook for Phase 1 habitat survey - a technique for environmental audit*. Peterborough: Joint Nature Conservation Committee.

- 2.6 During the course of the survey, any evidence of non-native/invasive plant species, as listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) was also noted. It is an offence to plant these species or otherwise cause them to grow in the wild.

Fauna

- 2.7 During the initial extended Phase 1 Habitat survey, initial observations, identification and signs of any species protected under the following list of Acts and Regulations were noted:
- The Conservation of Habitats and Species Regulations 2017
 - Part 1 of the Wildlife and Countryside Act 1981 (as amended)⁷;
 - The Protection of Badgers Act 1992⁸; and
 - The Environment (Wales) Act 2006 i Species of Principal Importance (SPI) for the conservation and enhancement of biodiversity in Wales.
- 2.8 In addition, the actual or potential presence of any notable species, such as those listed in the Birds of Conservation Concern 4 (red or amber listed species)⁹, Wrexham Local Biodiversity Action Plan species or Red Data Book species, was recorded
- 2.9 Any observations made during the survey indicating the actual or potential presence of protected species were used to inform the need for further survey, and several further protected species surveys were carried out over the course of 2017 and the spring/summer of 2018 on the Site and surrounding area. Methodologies for each of these are detailed below.

Great Crested Newts (GCN)

Habitat Suitability Index Assessment

- 2.10 During review of aerial imagery and OS maps prior to the field survey, several waterbodies (ponds P1 i P3) were noted within 500m of the Site. This comprised a group of three lagoons located approximately 265m to the north. An assessment of the ponds for their potential to support a breeding population of great crested newts *Triturus cristatus* (GCN) was completed, in accordance with the Habitat Suitability Index (HSI) methodology¹⁰. The HSI assessment scores ten suitability indices (factors thought to affect GCN) for a pond, both in the field and from a desktop study. These indices are:
- | | |
|-----------------------|--------------------------|
| - Geographic location | - Presence of water-fowl |
| - Pond area | - Presence of fish |
| - Pond drying | - Number of linked ponds |

⁷ *The Wildlife and Countryside Act 1981* (as amended). [Online]. London: HMSO Available at <http://www.legislation.gov.uk/ukpga/1981/69> [Accessed 14/08/2018]

⁸ *The Protection of Badgers Act 1992 (as amended)*. [Online]. London: HMSO Available at: <http://www.legislation.gov.uk/ukpga/1992/51/contents> [Accessed 14/08/2018].

⁹ Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. and Gregory, R.D. (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* **108**, 708i 746.

¹⁰ Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal* **10** (4), 143-155.

- Geographic location
- Water quality
- Shade
- Presence of water-fowl
- Terrestrial habitat
- Macrophyte coverage

2.11 The calculated HSI score, between 0 and 1, allows ponds to be classified by their anticipated suitability for GCN.

- 0.00 ÷ 0.49 ÷ Poor
- 0.50 ÷ 0.59 ÷ Below Average
- 0.60 ÷ 0.69 ÷ Average
- 0.70 ÷ 0.79 ÷ Good
- 0.80 ÷ 1 ÷ Excellent

2.12 A general assessment of the suitability of the terrestrial habitats within the Site for GCN was also undertaken.

Environmental DNA (eDNA) Survey

2.13 Environmental DNA sampling was undertaken to determine the presence or likely absence of GCN in accordance with the guidance set out in the eDNA sampling Technical Note¹¹

2.14 Sampling was took place on the 28th June 2017 by two personnel, including an ecologist licensed for GCN survey in England (Natural England ref. 2016-26854-CLS-CLS) and accredited under licence 68272a:OTH:SA:2017 to undertake GCN survey in Wales.

2.15 Sampling used kits obtained from FERA Science Ltd. This involved taking samples of agitated water from 20 locations around each pond and mixing thoroughly. Fifteen ml of this was then placed into each of the 6 sterile sample tubes containing preservative, precipitates and a DNA sequence used for degradation control. All samples were stored in accordance with FERA protocols. The samples were then transported under suitable conditions to a FERA laboratory for analysis. Results provided by the laboratory have one of three outcomes described in Table 1.

Table 1: Description of possible results of eDNA analysis

Result	Description
Positive	A positive result means that eDNA from GCN was detected and they have been present within the water in the 20 days preceding sampling. An eDNA score would be provided indicating the number of positive replicates from a series of twelve.
Negative	DNA from GCN was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive	Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided. Degradation can occur through poor storage of the samples or kits and inhibition can occur through unexpected chemicals in the sample.

¹¹ Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett, A., Williams, P., and Dunn, F. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA*. Oxford: Freshwater Habitats Trust. Available at: http://randd.defra.gov.uk/Document.aspx?Document=12287_WC1067_Appendix_5_TechnicalAdviceNoteUpdatedSept2014.docx [Accessed 14/08/2018].

Bats

Roosting Bats

Building Assessment

- 2.16 External aspects of the two buildings (B1 and B2) were examined to determine any potential access points and roost sites during the extended phase 1 habitat survey. Structural features with the potential for use by roosting bats were recorded and suitable access points/roost sites such as small gaps under eaves/soffit boards, raised or missing ridge tiles, gaps through degraded mortar and gaps at gable ends was sought. Where potential access points/roost sites were identified, evidence that bats actively used the access points was sought. Such evidence includes staining and the presence of bat droppings within or beneath the potential access points. The presence of heavy cob-webbing and general detritus around or within potential access points was considered as an indicator that bats have not recently used a feature. Binoculars were used to aid the surveys.

Assessment of Trees

- 2.17 Tree assessments were undertaken from ground level, with the aid of a torch and binoculars (where appropriate) by an appropriately qualified ecologist during the extended Phase 1 habitat survey. During the survey Potential Roosting Features (PRF) for bats such as the following were sought (Based on P16, British Standard 8596:2015)¹²:
- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
 - Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems);
 - Woodpecker holes;
 - Cracks/splits in stems or branches (horizontal and vertical);
 - Partially detached, loose or bark plates;
 - Cankers (caused by localised bark death) in which cavities have developed;
 - Other hollows or cavities, including butt rots;
 - Compression of forks with occluded bark, forming potential cavities;
 - Crossing stems or branches with suitable roosting space between;
 - Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk);
 - Bat or bird boxes; and
 - Other suitable places of rest or shelter.

¹² British Standards Institute. (2015). *BS 8596:2015 – Surveying for bats in trees and woodland – Guide*. London: British Standards Institute.

- 2.18 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features may enhance or reduce the potential value.
- 2.19 Trees were classified into general bat roost potential groups based upon the presence of these features. Table 1 (below) broadly classifies the potential categories as accurately as possible as well as discussing the relevance of the features. This table is based upon Table 4.1 and Chapter 6 in the Bat Conservation Trust's (BCT) good practice guidelines¹³
- 2.20 Although British Standard 8596:2015 groups trees with moderate and high potential, these have been separated in Table 2 below (as per Table 4.1 in The Bat Conservation Trust Guidelines) to allow more specific survey criteria to be applied.

Table 2: Classification and survey requirements for bats in trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August). Following additional assessments a tree may be upgraded or downgraded based on findings. If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from Natural England will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August). Following additional assessments a tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from Natural England will be required.

¹³ Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.) London: The Bat Conservation Trust.

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

NB: The Conservation of Habitats & Species Regulations 2017 affords protection to breeding sites and resting places of bats. The EU Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places where there is a reasonably high probability that the species concerned will return.

- 2.21 In combination with the above, all trees within the site were visually assessed for the existence of large cavities with the potential for use by nesting or roosting barn owl *Tyto alba*. Additional signs, such as pellets and faecal splashing were also searched for on or around potential perches.

Foraging and Commuting Bats

Habitat Suitability Assessment

- 2.22 An assessment of the suitability of the site for supporting foraging and commuting bats was undertaken with reference to current guidance¹³.

Activity Surveys (Transects)

- 2.23 The primary objectives of the transects were to identify foraging areas, commuting routes and species utilisation of the site. Guidance from the Bat Conservation Trust and Natural England¹⁴ indicates that it should be applied appropriately and in a proportionate manner, having regard to the area of habitat affected and the likely direct impact on bats. Although the habitats within the Site are of low value for foraging and commuting bats due to a lack of vegetation and other beneficial features, and generally would not require further survey, the transects were undertaken as part of the wider ecological survey work for the adjacent land and therefore the results of the surveys from the part of the transect route covering the Site have been included within this report.
- 2.24 Transects were undertaken in accordance with survey guidelines and commenced at sunset and were a minimum of two hours in duration. Each transect was walked at a steady pace and when a bat passed by, the species, time and behaviour was recorded on a site plan. This information provides a general view of the bat activity present on site and identifies the key foraging area/commuting routes.

¹⁴ Mitchell-Jones AJ and McLeish AP (2004). *The Bat Workers' Manual, 3rd Edition*. Peterborough: JNCC

- 2.25 Surveyors used Wildlife Acoustics Inc. Echo Meter Touch® bat detectors in conjunction with Echo Meter Touch® app and Apple Inc. iPad® during the transect surveys to detect bats and aid species identification.
- 2.26 Post-survey, bat calls were analysed using Wildlife Acoustics, Inc. Kaleidoscope© software package by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency. From this, the level of bat activity across the site in relation to the abundance of individual species foraging and commuting along habitats was assessed.
- 2.27 Transects were undertaken on a monthly basis from May to October 2017 (inclusive). All transects were undertaken when conditions were suitable, i.e. when the ambient air temperature exceeded 10°C and there was little wind and no rain. Full conditions and timings are listed in Table 3.

Table 3: Bat activity transect survey dates and conditions

Date	Sunset/Sunrise	Start and Finish Time	Temperature at start and end of survey °C	Rain (0-5)	Wind (0-5)	Cloud %
30.05.17	21:27	21:27-23:30	16-13	0	2	100
22.06.17	21:41	21:41 – 23:47	16-15	0	1	5
27.07.17	21.14	21:14-23:15	16-14	1	2	25
15.08.2017	20.39	20.39 – 22.39	15-14	0	0	0
28.09.2017	18.56	18.56 – 20.56	15-13	0	0	70
10.10.2017 (dusk)	18.26	18.23 – 20.26	15-13	0	1	70
11.10.2017 (dawn)	07.32	05.32 – 07.32	14-13	0-1	2	80-90

Static Bat Detector Surveys

- 2.28 A static passive recording broadband detector was deployed to the north-east of the Site in order to supplement the manual transects surveys undertaken across the Site and neighbouring land. An additional detector was also deployed on the neighbouring land, though was not relevant to the Site. Due to the size of the overall survey area and the suitability of the neighbouring land to support foraging and commuting bats, static units were deployed on Site for a minimum of five consecutive nights once per month May to October 2017 (inclusive) and in April 2018.
- 2.29 Passive monitoring was undertaken using an automated logging system Wildlife Acoustics Inc. Song Meter® SM4BAT-FS bat detector with outputs saved to an internal storage device. The detector was placed along a linear feature (tree line) to the north-east of the Site, which was considered to be of potential value to commuting/foraging bats. The device was placed for an extended period of time in suitable weather conditions (little or no rain/wind and temperatures

above 10°C). The conditions over each of survey period were however representative for the timing of the survey. Detectors were programmed to activate 30 minutes before dusk and recorded continuously until 30 minutes following sunrise.

- 2.30 The first five nights of data per survey occasion were analysed for all species, with any additional nights the detector may have been left out for only being assessed for bat species listed on Annex II of the Habitats Directive; Annex II species are those animal and plant species of Community interest whose conservation requires the designation of Special Areas of Conservation. The recorded data was analysed using Wildlife Acoustics, Inc. Kaleidoscope© software package to assess the amount of bat activity on Site by recording the number of bat passes.
- 2.31 Dates of the static surveys are listed in Table 4 below.

Table 4: Static bat detector details

Dates/number of nights	Units and location (all in the survey area but outside of the Site)
24.05.2017 to 29.05.2017 (5 nights)	S1 - At edge of two treelines/hedgerows to north east S2 - On eastern edge of quarry area
22.06.2017 to 27.06.2017 (5 nights)	S1 - On eastern edge of quarry area S2 - At edge of two treelines/hedgerows to north east
27.07.2017 to 01.08.2017 (5 nights)	S1 - On eastern edge of quarry area S2 - At edge of two treelines/hedgerows to north east
15.08.2017 to 20.08.2017 (5 nights)	S1 - On eastern edge of quarry area S2 - At edge of two treelines/hedgerows to north east
25.09.2017 to 30.09.2017 (5 nights)	S1 - On eastern edge of quarry area S2 - Adjacent River Dee to north
10.10.2017 to 15.10.2017 (5 nights)	S1 - On eastern edge of quarry area S2 - Adjacent River Dee to north
23.04.2018 to 04.05.2018 (5 nights)	S1 - On treeline at south eastern edge of quarry S2 -
Please note: all units were located outside the Site.	

Dormouse

- 2.32 The hazel dormouse *Muscardinus avellanarius* is listed under Annex IVa of the EC Habitats Directive and as a result is covered by the Conservation of Habitats and Species Regulations 2017. It is also protected under the Wildlife and Countryside Act 1981 (as amended) and is listed as a S42 SPI.

Nest Tube Survey

- 2.33 Dormouse surveys were undertaken in accordance with current good practice guidelines¹⁵. Surveys involved placing standard dormouse nest tubes every 20m in the suitable habitats, approximately 1.5m above ground. Approximately 65 tubes were installed in August 2017 and

¹⁵ Bright P., Morris P. & Mitchell-Jones, T. (2006). *The Dormouse Conservation Handbook*. Peterborough: English Nature.

subsequent checks were completed in September, October and November 2017 and April, May and June 2018. No suitable habitat was present within the Site, however some suitable areas were present within adjacent woodland, hedgerow and riverside habitat and these were therefore subject to survey as part of the wider ecological assessment. The locations of the nest tubes are shown on Figure 4.

- 2.34 The survey results were used in conjunction with an index of probability which indicates the likelihood of finding dormice during this period (see Table 5). The survey effort was also scored according to the method developed from the South West Dormouse Project¹⁶ which provides an overall index of effort by multiplying the sum of the months the tubes were checked by the number of tubes used (based on using 50 tubes). A score of 20 (or above) is deemed a thorough survey.
- 2.35 Using Table 5 a score of 18 (September 7 + October 2 + November 2 + April 1 + May 4 + June 2) was achieved for this Site. As 65 tubes were deployed rather than 50, however, the survey effort exceeded the minimum requirement by 30%.

Table 5: Index of probability for recording dormice in nesting tubes (per 50 tubes)

Month	Index of Probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Nut Search

- 2.36 Given the abundance of hazel *Corylus avellana* within the neighbouring habitats, a search for feeding evidence within suitable habitat was also undertaken during the October survey. This involved searching the ground for hazel nutshells that had been gnawed by dormice, leaving distinctive smooth gnaw-marks on the nutshells unlike other rodent species that also consume hazel nuts.
- 2.37 The survey comprised systematic searching below the canopy of groups of hazel, in 10m x 10m sections for approximately 20 minutes per section.

Otter

- 2.38 Although the Site does not contain any habitat that is suitable for otter, the nearby River Dee is known to support this species, and is designated as a SAC, with otter being a secondary reason for designation. As the river loops around the habitats adjacent to the Site, it was considered

¹⁶ Chanin, P., & Woods, M. (2003). *Surveying dormice using nest tubes: results and experiences from the South West Dormouse Project. English Nature Research Report No 524*. Peterborough: English Nature.

appropriate to conduct an otter survey in order to establish what impacts the proposed development may have on any otter utilising the river and adjacent habitat. The survey was undertaken on the 22nd March 2018 and comprised the inspection of all suitable habitats. Suitable riparian habitat included the bank of the River Dee (where accessible) closest to the Site and up and downstream from the Site. In addition, the three lagoons to the north and associated ditches were surveyed.

- 2.39 Places of rest such as holts and laying up sites can be located some distance from a watercourse, sometimes being set back in woodland amongst log piles, tree roots and rubble. The survey area was therefore extended to include woodland, scrub and hedgerows situated between the eastern boundary of the Site and the river and to the north of the Site. The areas of woodland and scrub covered within the survey and the extent of watercourse/waterbodies surveyed is shown on Figure 5.
- 2.40 Otter surveys should not be undertaken during periods when there is heavy rain as field signs will be washed away and/or obscured by higher water levels. The survey was conducted during fine weather, after a few days of fine weather and all field signs would have been visible if present.

Field Signs

- 2.41 Survey methodology attempted to determine the status of otters on the River Dee and adjacent habitats. The methodology was based on that detailed within Chanin (2003)¹⁷.
- 2.42 Due to the unlikely event of actual observation, the survey concentrated on locating field signs indicating otter presence or use. Such field signs include:
- Spraints – characteristic sweet-smelling, black tar-like (where fresh/relatively recent i.e. within a few weeks) or grey crumbly (when old) faecal deposits usually containing fish scales, bones and occasionally invertebrate exoskeleton and bird feathers.
 - Footprints – In good substrate typically asymmetrical and showing five toes arched around a large pad and, depending on substrate, webbing and claw marks. Poorer, generally coarser substrates do not often enable the identification of otter footprints.
- 2.43 Additional signs of otter presence may occur, although without additional evidence are usually not conclusive proof of current otter presence:
- Feeding remains – Remains of fish, and crustaceans and birds
 - Slides/haul-outs – Routes into and out of the water, which are usually associated with terrestrial routes such as short cuts around meanders or along traditionally, used otter paths/routes.
 - Couches/hovers – above ground resting place. Usually associated with cover such as dense scrub, rushes or reed, flood debris or fallen trees. Many couches are rarely used whilst others more so. Difficult to prove use without radio tracking.
 - Holts – below ground resting site usually associated with sprainting. Sometimes used with greater frequency than couches and can be important for breeding (natal holts) where other signs are usually absent. Notoriously difficult to find or prove without radio tracking.

¹⁷ Chanin, P. (2003). *Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10*, English Nature, Peterborough.

Badger

- 2.44 As part of the extended phase 1 habitat survey, the Site was surveyed for badger. This was conducted following standard methodology as outlined by Harris *et al* (1989)¹⁸ to record evidence of badger presence/occupation of the Site and area immediately surrounding it. Evidence of badger occupation and activity sought included:
- Setts, including earth mounds, evidence of bedding and runways between setts;
 - Latrines, which are often located close to setts, at territory boundaries or adjacent to favoured feeding areas;
 - Prints and paths or trackways;
 - Hairs caught on rough wood or fencing; and
 - Other evidence: including snuffle holes, feeding and playing areas and scratching posts. The identification of these latter signs on their own does not necessarily provide conclusive evidence of the presence of badgers. A number of such signs need to be recorded in conjunction before badger presence can be confirmed.
- 2.45 If no specific badger activity was recorded in association with an animal path, it was marked as general animal paths, i.e. could be used by deer, fox *Vulpes vulpes*, as well as badger.
- 2.46 Any setts noted were mapped and their status and level of activity recorded. Sett status is broadly categorised as follows:
- *Main sett* – usually continuously used with many signs of activity, a large number of holes and conspicuous spoil mounds;
 - *Annexe sett* – usually located close to a main sett and connected to it by well used paths. Annexes may not be continuously occupied;
 - *Subsidiary sett* – lesser-used setts comprising a few holes and without associated well-used paths. Subsidiary setts are not continuously occupied; and
 - *Outlier sett* – one or two holes without obvious paths. These are used sporadically.
- 2.47 Level of activity is defined as:
- *Well-used* – clear of debris, with trampled soil mounds and obviously active. Signs of activity include presence of prints and dislodged guard hairs around the entrances;
 - *Partially-used* – some debris (e.g. twigs) or live plants at the entrance. Could be used following minimal excavation. Generally signs of badger activity within the vicinity, for example pathways; and
 - *Disused* – partially or completely blocked entrances and no signs of recent activity.
- 2.48 A brief assessment of the availability and quality of foraging habitat within the Site was made during the survey.

Breeding Birds

- 2.49 Due to a lack of vegetation within the Site, suitability for breeding birds was considered to be negligible. However, the Site was covered during the breeding bird surveys undertaken on the

¹⁸ Harris, S., Creswell, P. and Jefferies, D. (1989). *Surveying Badgers*. London: Mammal Society.

neighbouring habitats. The limited results from the Site are therefore included within this report. The survey methodology employed was broadly based on that of territory mapping¹⁹ as used for the British Trust for Ornithology (BTO) Common Bird Census (CBC). Standard BTO species codes and symbols for bird activities were used to identify birds and denote activity, sex and age where appropriate.

- 2.50 The criteria used in the assessment of breeding birds has been adapted from the standard criteria proposed by the European Ornithological Atlas Committee²⁰ and are grouped into three categories: possible breeder e.g. birds observed in suitable habitat or singing male recorded, probable breeder e.g. pair in suitable habitat, territory defended, agitated behaviour or nest building and confirmed breeder e.g. recently fledged young observed, adult birds carrying food for young. Birds that were considered to be not using the Site for breeding were categorised as non breeders e.g. flying over the Site, migrant, habitat not suitable.
- 2.51 To provide a reasonable level of accuracy for determining the population status of the breeding birds on the Site, three surveys were undertaken during the hours after dawn. Surveys were carried out in early July 2017 and April and May 2018, by an experienced ornithologist. Bird surveys were not undertaken in unfavourable conditions such as heavy rain or strong wind, which may negatively affect the results.

Reptiles

Habitat Suitability

- 2.52 An assessment of the habitats on site for their suitability to support reptiles was made during the extended Phase 1 Habitat Survey in 2017. A very limited amount of suitable terrestrial habitat was noted within the ephemeral habitat on the earth mound at the north and edges of the Site, which was considered to provide some limited habitat. It was noted that many of the refugia had been lost during works to the earth mound/removal of ex-landfill equipment between 2017 and 2018 survey seasons. Given the reduction in habitat suitability to almost negligible as a result of these works, it was not considered necessary to reinstall the refugia to complete the surveys in 2018.

Field Surveys

- 2.53 Presence/absence surveys were undertaken in accordance with the guidelines in the Froglife Advice Sheet 10²¹. Methods involved a search for basking reptiles on/under naturally occurring and strategically positioned artificial refugia. A total of 28 refugia were placed within the survey area during late summer 2017; these comprised 0.5m² pieces of numbered roofing felt, placed with their dark sides uppermost. After a two week bedding-in period the refugia were checked on three separate occasions in 2017 during suitable weather conditions. The locations of the refugia are shown on Figure 1.
- 2.54 Guidelines recommend that surveys are undertaken during the following periods:

¹⁹ Bibby, C.J., N.D. Burgess & D.A. Hill. (2000) *Bird Census Techniques: 2nd Edition*. London: Academic Press

²⁰ EOAC, (1979). *Categories of Breeding Bird Evidence*. European Ornithological Atlas Committee.

²¹ Froglife. (1999). *Froglife Advice Sheet 10: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife

- At temperatures of between 9°C & 18°C;
- On sunny/cloudy days with little or no wind; and,
- Between 07:00 & 11:00 hrs (AM survey) and between 16:00 & 19:00 hrs (PM survey);

In addition guidelines also recommend:

- Using regularly spaced corrugated tin sheeting/similar (0.5 m²) as artificial refugia, with a black upper side;
- Approaching refugia from a downwind direction, casting no shadow and making sure not to disturb basking animals when checking;
- That lifting and replacing tins, to check for the presence of reptiles underneath, is undertaken with care to avoid potential harm to any animals underneath; and
- That the location and number of tins are mapped to aid survey and avoid the possibility of leaving tins in situ upon completion of the survey.

2.55 The surveys were undertaken in autumn 2017 by suitably experienced ecologists. The weather conditions, including relative wind speed, cloud cover and ambient temperature, along with any other notable conditions were recorded for each survey visit and can be viewed in Table 6 below.

Table 6: Reptile survey dates and conditions

Survey Visit	Date and Start Time	Temp (°C)	Weather	Rain	Cloud Cover (%)
1	28/09/2017 16:00	18	Sunny with patchy cloud. Light breeze.	None	25
2	10/10/2017 10:00	14	Sunny with patchy cloud. Light air.	None	30-40
3	17/10/2017 10:30	12	Sunny, bright. Moderate breeze.	None	0-10

Limitations

2.56 The accuracy of data held by other parties and consultees is liable to vary for a number of reasons that are out of the control of the relevant organisation, such as recorder experience. Additionally, the data held by these consultees may not be exhaustive and the absence of a particular species or habitat from the results does not necessarily represent the absence of that feature from the search area. The records do, however, provide useful baseline information. The data provided by cofnod constitutes third party data and FPCR cannot be held responsible for its accuracy.

2.57 The results detailed within this report are representative of the Site at the time of survey.

3.0 RESULTS

Data Consultation

- 3.1 A number of records of designated sites and protected/notable species were provided by cofnod. These are discussed in more detail under each sub-heading below and are shown on Figure 1.

Statutory Designated Sites

- 3.2 Three internationally important sites for nature conservation, all of which were Special Areas of Conservation (SACs) were identified within 5km of the Site. These are detailed in the Table 7.

Table 7: Internationally designated sites of nature conservation importance within 5km of the Site

Name	Designation	Distance and aspect from boundary	Description
River Dee and Bala Lake	SAC	c.105m to W	Designated for its aquatic plant communities and Atlantic salmon <i>Salmo salar</i> and Floating water-plantain <i>Luronium natans</i> populations. Populations of otter, sea lamprey <i>Petromyzon marinus</i> , Brook lamprey <i>Lampetra planeri</i> , river lamprey <i>Lampetra fluviatilis</i> and bullhead <i>Cottus gobio</i> also notable
Johnstown Newt Sites	SAC	c.3.6km to N	Habitat mosaic on former coal and clay extraction sites with one of the largest populations of great crested newt in Great Britain.
Berwyn and South Clwyd Mountains	SAC	c.4.5km to NW	Supports the largest stands of upland European dry heath and most extensive tract of near-natural blanket bog in Wales. Other notable habitats include: Semi-natural dry grasslands and scrubland faces on calcareous substrates, transition mires and quaking bogs, calcareous and calcschist screes of the montane to alpine levels and Calcareous rocky slopes with chasmophytic vegetation

- 3.3 Two statutory designated sites of importance for nature conservation are located within 2km of the Site. These are both Sites of Special Scientific Interest (SSSI). Details are provided in Table 8.

Table 8: Statutory designated sites of nature conservation importance within 2km of the Site

Name	Designation	Distance and aspect from boundary	Description
River Dee	SSSI	c.105m to W	Nationally important transition through a range of river types, from mesotrophic to eutrophic. Also designated for populations of Atlantic salmon, otter, club-tailed dragonfly <i>Gomphus vulgatissimus</i> and fluvial geomorphology
Nant-Y-Belan and Prynella Woods	SSSI	c.580m to SE	Woodland to immediate north of River Dee

Non-statutory Designated Sites

- 3.4 Two locally designated sites of nature conservation (Local Wildlife Sites) occur within 1km of the Site, the closest of which is the Ty Mawr and Tan Y Cut Wood Local Wildlife Site (LWS). This is situated approximately 625m to the west, beyond the river and several agricultural fields. Table 9 below has details of the sites and their approximate locations.

Table 9: Non-statutory sites of nature conservation value within 1km of the Site

Name	Designation	Distance and aspect from boundary	Description
Ty Mawr and Tan Y Cut Wood	LWS	c.625m to W	Woodland
Bathground Wood	LWS	c.1200m to N	Woodland

Protected/Notable Species

- 3.5 A number of records of protected and notable species were returned by cofnod. Although none of the records were from within the Site, all those listed were from within 1km of the Site boundary. These are summarised in Table 10 and their recorded locations shown on Figure 1.

Table 10: Protected and notable species records within 1km of the Site

Species	Conservation Status	Number of Records	Distance of Closest Record from Site and Relevant Notes
Reptiles			
Slow worm <i>Anguis fragilis</i>	WCA, SPI	2	c.630m to W
Bats			
Brown Long-eared Bat <i>Plecotus auritus</i>	CHSR, WCA, SPI	1	c.300m to S

Species	Conservation Status	Number of Records	Distance of Closest Record from Site and Relevant Notes
Unidentified bat <i>Chiroptera</i>	CHSR, WCA	2	c.550m to W
Other Mammals			
Otter <i>Lutra lutra</i>	CHSR, WCA, SPI,	3	c.670m to SE
Badger <i>Meles meles</i>	PBA	3	c.390m from Site
Birds			
Barn Owl <i>Tyto alba</i>	WCA, SCH1	1	c.1km to W
Black-headed Gull <i>Chroicocephalus ridibundus</i>	WCA, BoCC Amber	1	c.1km to W
Brambling <i>Fringilla montifringilla</i>	WCA, SCH 1	1	c.840m to SE
Bullfinch <i>Pyrrhula pyrrhula</i>	WCA, SPI, BoCC Amber	2	c.820m to W
Common Sandpiper <i>Actitis hypoleucos</i>	WCA, BoCC Amber	1	c.830m to SE
Cuckoo <i>Cuculus canorus</i>	WCA, SPI, BoCC Red	1	c.820m to W
Dipper <i>Cinclus cinclus</i>	WCA, BoCC Amber	3	c.390m to SW
Dunnock <i>Prunella modularis</i>	WCA, SPI, BoCC Amber	2	c.840m to W
Fieldfare <i>Turdus pilaris</i>	WCA, SCH1, BoCC Red		c.840m to SE
Grey Wagtail <i>Motacilla cinerea</i>	WCA, BoCC Red	2	c.840m to SE
Hen Harrier <i>Circus cyaneus</i>	WCA, SCH1, SPI, BoCC Red	1	c.840m to SE
House Martin <i>Delichon urbicum</i>	WCA, BoCC Amber	2	c.840m to SE
House Sparrow <i>Passer domesticus</i>	WCA, SPI, BoCC Red	2	c.850m to W
Kestrel <i>Falco tinnunculus</i>	WCA, SPI, BoCC Amber	1	c.215m to S
Kingfisher <i>Alcedo atthis</i>	WCA, SCH1, BOCC Amber	2	c.840m to SE

Species	Conservation Status	Number of Records	Distance of Closest Record from Site and Relevant Notes
Mallard <i>Anas platyrhynchos</i>	WCA, BoCC Amber	1	c.1km to W
Marsh Tit <i>Poecile palustris</i>	WCA, SPI, BoCC Red	1	c.840m to SE
Mistle Thrush <i>Turdus viscivorus</i>	WCA, BoCC Red	3	c.840m to SE
Mute Swan <i>Cygnus olor</i>	WCA, BoCC Amber	1	c.410m to SW
Redwing <i>Turdus iliacus</i>	WCA, SCH1, BoCC Red	1	c.840m to SE
Song Thrush <i>Turdus philomelos</i>	WCA, SPI, BoCC Red	2	c.840m to SE
Stock Dove <i>Columba oenas</i>	WCA, BoCC Amber	1	c.840m to SE
Willow Tit <i>Poecile montanus</i>	WCA, SPI, BoCC Red	1	c.840m to SE
Willow Warbler <i>Phylloscopus trochilus</i>	WCA, BoCC Amber	1	c.840m to SE

Key to Conservation Status: CHSR ĩ Conservation of Habitats & Species Regulations 2010, WCA ĩ Wildlife & Countryside Act 1981 (as amended), SCH1 ĩ Birds listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended), SPI ĩ Species of Principal Importance in Wales listed on S7 of the Environment (Wales) Act 2016, (BOCC ĩ Birds of Conservation Concern 4 (red/amber), PBA ĩ Protection of Badgers Act 1992

Field Survey – Habitats and Flora

- 3.6 The Site was found to support only a small number of habitats and little in the way of flora. The habitats identified are discussed in more detail under each subheading below. The locations of all habitats are shown on Figure 2.

Scattered Scrub

- 3.7 A very limited amount of scattered scrub was present at the north of the Site, adjacent to the landfill disposal. The scrub was very young in age and was considered to have only relatively recently colonised an area of bare earth and tall ruderal vegetation following recent earthworks. Species recorded included goat willow *Salix caprea*, silver birch *Betula pendula* and bramble *Rubus fruticosus* agg. This habitat type was unmanaged at the time of survey and in several places it was beginning to encroach further into neighbouring tall ruderal habitat.

Scattered Broadleaved Trees

- 3.8 Few trees were recorded on site, however those that were noted were located on the western boundary, forming a line to the north of building B1, bordering the landfill disposal. Species recorded included ash *Fraxinus excelsior*, sycamore *Acer pseudoplatanus* and goat willow. A dense understorey of goat willow and butterfly bush *Buddleja davidii* scrub was present. Several young silver birch trees were also present on the boundary fence at the south of the Site.

Scattered Coniferous Trees

- 3.9 In addition to the scattered broadleaved trees recorded to the west and south, several coniferous trees were also recorded, forming the boundary between the Site and the Environmental Compound and Power Station at the north of the Site. These comprised a line of trees of a single species, Leyland cypress *X Cuprocyparis leylandii* and generally appeared to be in good condition, although the dense foliage on the branches covered the branches towards the canopy and therefore any damage or rot may have been concealed.

Improved Grassland

- 3.10 A small amount of improved grassland is present at the extreme south of the Site. This was species-poor, and dominated by perennial rye-grass *Lolium perenne*, with some red fescue *Festuca rubra* agg., common bent *Agrostis capillaris* and annual meadow-grass *Poa annua*. Forbs were very rare, with only dandelion *Taraxacum officinale* agg. and common daisy *Bellis perennis* noted at a very sparse distribution. The area was heavily sheep-grazed at the time of survey, resulting in a very short sward height.

Tall Ruderal

- 3.11 A small amount of tall ruderal vegetation formed a strip on the northern boundary, bordering the neighbouring landfill disposal site. This comprised species that are quick to colonise recently disturbed areas such as rosebay willowherb *Chamerion angustifolium*, creeping thistle *Cirsium arvense*, broad-leaved dock *Rumex obtusifolius* and false oat-grass *Arrhenatherum elatius*. This habitat appeared to be unmanaged at the time of survey.

Hardstanding

- 3.12 The majority of the Site comprised hardstanding associated with the former landfill yard. Some stored and abandoned equipment associated with previous activities at the Site such as shipping containers, rolls of wire fencing, large metal tanks, rubble piles and metal cages remained on the Site.
- 3.13 The area of hardstanding to the south-west of the post and rail fence is still in use by Border Tachograph Services Ltd for access to building B1, while the area to the south-west of this is in use as occasional parking for the FCC Environment office building located adjacent to the Site.
- 3.14 The vast majority of the hardstanding was devoid of any vegetation, with only occasional opportunistic specimens such as dandelion noted growing in cracks.

Buildings

- 3.15 Two buildings were noted on Site during the survey. These comprised building B1, the metal-clad warehouse building used by Tachograph Border Services Ltd and building B2, a small breezeblock structure associated with the former landfill yard. These are described in more detail under the bat section below.

Bare Ground

- 3.16 During the initial phase 1 habitat survey a large area of bare earth was present to the north of the Site, comprising a shallow mound that was slowly becoming colonised by sparse vegetation. During subsequent site visits it was noted that this had been flattened and the majority of the bare earth removed to leave hardstanding behind. A bare earth strip to the east of this previous mound remains, however. This was sparsely vegetated with species such as creeping thistle and bristly ox-tongue *Helminthotheca echioides*. A single common spotted orchid *Dactylorhiza fuchsii* was also noted on the eastern boundary of the Site within the bare earth.

Introduced Shrub

- 3.17 A small area of dense ornamental planting was present in the junction of two fences at the south of the Site. This comprised planted garden shrub species such as laurel *Laurus* sp., and was unmanaged at the time of survey.

Non-native/Invasive Plant Species

- 3.18 No species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were noted within the Site during the survey. No records of non-native/invasive plant species were provided as part of the data consultation.

Field Survey – Fauna

- 3.19 During the survey, the Site was found to contain very limited habitat suitable for supporting protected species, due to a lack of vegetation. The habitats surrounding the Site were considered more suitable to support protected species and it was subsequently considered necessary to assess whether such species may be affected by the proposed development. Therefore, the results from surveys across the wider area, where considered relevant, are included within this report. Each protected species is discussed under a separate sub-heading below.

Great Crested Newts (GCN)

- 3.20 As noted above, three ponds within 500m of the Site were highlighted during review of OS mapping. These were subject to a Habitat Suitability Index assessment and eDNA survey. The results of these are provided below.

Habitat Suitability Index Assessment

- 3.21 The waterbodies identified within 500m of the Site comprised three lagoons associated with the former landfill. These were located to the north of the Site, within an area of grassland. These are labelled P1, P2 and P3 and are displayed on Figure 2. Each pond was roughly square in shape, with shallow sloping sides in places. Ponds P1 and P2 were relatively light and open, with grassy banks and scattered scrub, while Pond P3 was much more enclosed by small trees and more

dense scrub. It is considered likely that the ponds are permanently wet, with water being present in all three ponds throughout site visits in 2018, despite extended periods of dry weather. The ponds contained varying amounts of marginal and emergent vegetation, which was dominated by reedmace *Typha latifolia*, with common reed *Phragmites australis* and rushes *Juncus* spp. also present. Submerged/floating vegetation was largely absent, with the exception of a small amount of an unidentified water lily. The terrestrial habitats within the Site were considered to provide moderate to good suitability for GCN in terms of foraging, sheltering and hibernation.

- 3.22 Each of the three waterbodies was assessed using the Habitat Suitability Index methodology described above. Table 11 below details the results for each waterbody.

Table 11: HSI assessment results

Pond Reference	HSI Score	HSI Rating
P1	0.64	Average
P2	0.67	Average
P3	0.65	Average

eDNA Survey

- 3.23 FERA Science Ltd. provided the results of the eDNA tests. All three waterbodies tested negative for GCN eDNA, and given the presence of the River Dee which is considered to represent a major barrier to dispersal for this species, it is considered highly unlikely that this species would represent a constraint to development and it is therefore not discussed further within this report.

Bats

- 3.24 No records of bat roosts within or adjacent to the Site were supplied as part of the data consultation. The nearest record of an individual bat was of a brown long-eared bat *Plecotus auritus* at least 300m from the Site.

Roosting

Building Assessment

- 3.25 The location of surveyed buildings is provided on Figure 2.
- 3.26 Building B1 - This is a large single-storey commercial building that is currently used for automotive maintenance (the Border Tachograph Services Ltd. building). The main structure consists of brick and blockwork to 2m with corrugated sheet metal sides and roof above. The roof structure is constructed from exposed steel work with no void present and multiple skylights in the roof. A lean-to type structure is located at the southern end of the main buildings. Internally, a two-storey block-built office is located along the western wall; this structure is flat roofed and has no void present. Netting is installed throughout the building at a height of approximately 6m to prevent birds roosting. This building is considered to offer Negligible potential to support roosting bats.
- 3.27 Building B2 - This is a small single-storey block-built store with a flat, felted roof. Internally, the structure is divided into three small rooms; no void is present, with exposed plywood forming the

ceiling directly below the felt. Wooden soffit boards are present along all aspects but are tightly fixed to the walls, resulting in a lack of gaps underneath them. This building is considered to offer Negligible potential to support roosting bats.

Assessment of Trees

- 3.28 No trees were present within the Site. Those trees present on the boundaries were considered to have Negligible potential to support roosting bats due to a lack of suitable PRFs such as cracks, splits and holes. Trees within the adjacent habitats were considered to offer greater suitability.
- 3.29 As both buildings on site and all trees on the boundaries of the Site were considered to offer negligible potential to roosting bats, no further survey was considered necessary and their demolition/removal is not considered to pose a constraint to development. Given this, roosting bats are not discussed further within this report.

Foraging and Commuting

Activity Surveys (Transects)

- 3.30 Given the lack of vegetation within the Site, and lack of other features suitable for foraging and commuting bats, the Site was assessed as having Negligible potential to support foraging and commuting bats in accordance with current guidelines (Collins, 2016). Ordinarily, further survey would not be required for sites with such low potential to support bats, however the Site was covered as part of survey work within the wider area and therefore a summary of relevant results is provided below in Table 12.

Table 12: Summary of bat transect survey results

Survey Month/Year	Bat Species	Number of Passes Recorded	Notes
May 2017	Soprano pipistrelle	1 (commuting)	Non-visual
	Common pipistrelle	3 (commuting)	Non-visual
	Noctule	1 (commuting)	Non-visual
June 2017	Soprano pipistrelle	1 (commuting)	Non-visual
July 2017	Soprano pipistrelle	1 (commuting)	Non-visual
August 2017	Noctule	1 (commuting)	Non-visual
	Soprano pipistrelle	1 (commuting)	Non-visual
September 2017	Soprano pipistrelle	4 (foraging)	-
October 2017 (Dusk)	None	None	-
October 2017 (Dawn)	None	None	-
April 2018	None	None	-

- 3.31 The majority of activity recorded was that of commuting bats, which is to be anticipated given the lack of vegetation within the Site and therefore reduced suitability for foraging; it is considered that most bats were likely passing over the Site to access more optimal foraging habitats such as

those to the north and east. The majority of activity recorded comprised bats heard on the bat detectors but not seen, supporting evidence that the majority of activity was that of commuting bats. The exception was four foraging passes by a soprano pipistrelle *Pipistrellus pygmaeus* in September 2017, where a single bat was observed foraging and characteristic feeding buzzes were recorded. Soprano pipistrelle was the most commonly recorded species, with other activity comprising only three passes by common pipistrelle *Pipistrellus pipistrellus* in May 2017 and two passes by noctule *Nyctalus noctula* bats in May and August 2017. Overall, bat activity on the Site during the transect surveys was considered to be lower than that within neighbouring habitats.

Activity Surveys (Static Detectors)

- 3.32 Each month during the period May to October 2017 (inclusive) and also in April 2018, a static detector was placed off-site to the north, on the edge of adjacent woodland. This was part of survey work across the wider area that encompassed the activity transects. Without visual survey, static detectors can only provide a certain amount of information about the locations of bats they record (i.e. those bats present within a certain radius at any given time). The 2018 data is not currently available but will be reported at a later date, but a brief summary of the information to date is provided now, with Table 13 providing a more detailed breakdown.
- 3.33 Overall the static detector activity ranged between a maximum of 1,003 registrations in July 2017, to a minimum of 279 registrations in September 2017 and an average of 531 registrations per month or average of 265 registrations per unit. The individual unit with the highest activity was S2 in July with 546 registrations and the unit with the lowest recorded activity (84 registrations) was Unit 2 in June 2017.
- 3.34 The static detectors recorded a total of eight specie/species groups comprising the following (in order of abundance): Soprano pipistrelle (37.1% of total 2017 activity), common pipistrelle (29%), noctule (14%), *Myotis* species (7.9%), contacts which could be either common or soprano pipistrelle (6.4%), brown long-eared (3%), with 1.3% of contacts comprising social calling from unknown species, *Nyctalus* species (1%) and lesser horseshoe *Rhinolophus hipposideros* (0.2 % or just 7 registrations over the entire period).

Table 13: Summary of 2017 static bat detector results

Date	Unit ref	Number of registrations	Species recorded (in order of abundance most to fewest) and other notes
May 2017	1	428	Noctule, soprano pipistrelle, common/soprano pipistrelle (i.e. unidentified), brown long-eared, <i>Myotis</i> species, common pipistrelle, <i>Nyctalus</i> sp. In addition two registrations of social calling were noted.
	2	187	Noctule, common pipistrelle, soprano pipistrelle, <i>Myotis</i> sp, common/soprano pipistrelle, brown long-eared, <i>Nyctalus</i> sp, Lesser horseshoe.
June 2017	1	216	Common pipistrelle, soprano pipistrelle, common/soprano pipistrelle, noctule, <i>Nyctalus</i> sp, <i>Myotis</i> sp, brown long-eared ad lesser horseshoe. One registration of social call.
	2	84	Soprano pipistrelle, common pipistrelle, noctule, common/soprano pipistrelle, lesser horseshoe.

Date	Unit ref	Number of registrations	Species recorded (in order of abundance most to fewest) and other notes
July 2017	1	461	Soprano pipistrelle, <i>Myotis</i> sp, common/soprano pipistrelle common pipistrelle, noctule, brown long-eared. In addition 14 registrations of social calling were noted.
	2	542	Common pipistrelle, soprano pipistrelle, noctule, common/soprano pipistrelle, <i>Myotis</i> sp, <i>Nyctalus</i> sp, brown long-eared.
August 2017	1	302	Common pipistrelle, soprano pipistrelle, noctule, <i>Myotis</i> sp., common/soprano pipistrelle, <i>Nyctalus</i> sp, brown long-eared.
	2	368	Soprano pipistrelle, <i>Myotis</i> sp, Noctule, common pipistrelle, common/soprano pipistrelle, <i>Nyctalus</i> sp, brown long-eared and lesser horseshoe.
September 2017	1	161	Brown long-eared, soprano pipistrelle, <i>Myotis</i> sp, common/soprano pipistrelle, Noctule, common pipistrelle, In addition 16 registrations of social calling were noted.
	2	118	Soprano pipistrelle, <i>Myotis</i> sp, Noctule, common/soprano pipistrelle, common pipistrelle, <i>Nyctalus</i> sp. One registration of social call.
October 2017	1	233	Soprano pipistrelle, common/soprano pipistrelle, common pipistrelle, <i>Myotis</i> species, Noctule, brown long-eared and lesser horseshoe. In addition 7 registrations of social calling were noted
	2	90	Soprano pipistrelle, common pipistrelle, brown long-eared, common/soprano pipistrelle, <i>Myotis</i> sp, Noctule, <i>Nyctalus</i> sp, lesser horseshoe. In addition 2 registrations of social calling were noted

Dormouse

Habitat Assessment

- 3.35 The Site itself does not contain any habitat suitable to support dormouse; unlike habitats surrounding it, which have the potential to support foraging and sheltering dormouse. A small block of woodland was present to the east of the Site and ran north, extending into grassland. The woodland had a varied structure, although no large, mature trees were present. Hazel was abundant within the understorey, and honeysuckle *Lonicera periclymenum* was noted at an occasional frequency. Both species provide optimal foraging for dormouse. This woodland is linked by dense hedgerows to a line of trees/strip of woodland along the western bank of the Dee, within which an understorey of abundant hazel is present. This again provides an optimal food source for this species. Habitat connectivity to off-site areas is also present as a result of the tree line along the river, which eventually joins woodland to the north and west.

Nest Tube Survey

- 3.36 No evidence of dormouse was noted in any of the nest tubes on any of the survey visits during 2017 and 2018.
- 3.37 Several of the tubes had been used by other species. Nesting material, primarily comprising dry leaves and grasses was recorded with cached hazelnuts in a small number of the tubes. The nuts showed gnaw marks indicative of wood mouse *Apodemus sylvaticus* in all cases.

Nut Search

- 3.38 No nutshells with evidence of dormice feeding marks were noted during the nut search, despite an abundance of hazel trees within the search areas. Several with feeding marks made by wood mice and other mammals such as grey squirrel *Sciurus carolinensis* were recorded.
- 3.39 Given the suitability of habitats for dormouse surrounding the Site, the lack of any evidence recorded during the surveys, together with a lack of records of dormouse presence within the wider local area, it is considered highly unlikely that dormouse are present in the area and this species is therefore not considered to pose a constraint to development. As a result, this species is not discussed any further within this report.

OtterHabitat Assessment

- 3.40 No habitat suitable for otter is located within the Site.
- 3.41 The River Dee is designated as a Special Area of Conservation, with otter being a secondary reason for designation. The river, which runs through both Wales and England, is known to support healthy populations of otter. The Dee is situated to the west of the Site, beyond the B5605 and Gelli Wood and flows north toward Pen-y-Bont Farm before turning east and looping round the lagoons to the north of the Site and flowing south adjacent to Darland Wood. The river is wide and varies in depth and speed of flow along its length, with fast-flowing shallow areas and slower-moving, deeper areas. The substrate is generally rocky, with rocks and pebbles noted frequently. The river banks vary in profile; some gently-sloping, rocky shore-like areas suitable for feeding and spraint-marking are present, particularly on the western bank, while much of the eastern side is steep earth banks covered by dense broad-leaved woodland. A number of mature trees are also present on the western bank on its steeper part, the roots of which provide numerous couch and holt building opportunities for otter. One of the primary reasons for the river's designation as an SAC is its population of Atlantic salmon *Salmo salar*, which provides an optimal food source for otter. The river also supports a population of grayling *Thymallus thymallus*, brown trout *Salmo trutta* and its anadromous form, sea trout, as well as brook lamprey *Lampetra planeri*, river *L. fluviatilis* and sea lamprey *Petromyzon marinus*. These latter three species also form part of the SAC designation. Species such as these are readily available prey for otter within the river. Crustaceans and birds within the river also represent potential prey for otter, but to a lesser extent.
- 3.42 The three off-site waterbodies (ponds P1 to P3) to the north of the Site also provide habitat suitable for otter, with sheltered foraging available. The ponds are considered to be less optimal than the river for holts and couches due to limited bank depth and vegetative cover, although P3 is surrounded by scrub and young trees/saplings. The lagoons also offer connectivity between

the river to the east and west of the Site for otter, with woodland habitat also located in-between that offers terrestrial connectivity between different parts of the river.

- 3.43 Terrestrial habitat surrounding the Site that could support otter comprises woodland and hedgerows, which, as mentioned above, provide connectivity to different parts of the Dee. These habitats also provide potential places of rest. Connectivity is considered better to the north of the Site than it is across or to the south of the Site, due to the habitats present which include a large expanse of short-grazed grassland to the south, which offers little cover to commuting otter.

Field Survey

- 3.44 Evidence of otter presence was abundant both along the river and on the banks of the ponds. (see Figure 5).
- 3.45 Numerous confirmed and potential couches and rest areas were noted along the river, many with obvious pathways leading to them and with additional evidence such as footprints and spraints of varying ages. Some small spraints were noted near to one couch within a depression within shallow tree roots and it is considered possible that these could have been produced by an otter cub due to their size, indicating that breeding is likely within the area. The eastern bank of the river was not surveyed due to access, although some evidence of potential holts was recorded via binoculars. It is considered possible that natal holts are present on the river banks or within the woodland on this eastern side of the river. Spraints of varying ages were commonly noted along the length of the river. Feeding remains, comprising fish scales and bones were noted, during the otter survey, the phase 1 habitat survey and other protected species surveys. Feathers and limbs of a bird that was considered likely to have been partially consumed by otter were also observed on the river bank during the survey.
- 3.46 An otter was observed swimming in the river and preening on a rock during the breeding bird survey in early July 2017. This was considered likely to be an adult male due to its large size.
- 3.47 Use of the ponds by otter was obvious, with several slides and paths noted, together with footprints and spraints of varying ages. As mentioned above, well-used mammal paths indicative of use by otter between the ponds and river were noted during the survey.
- 3.48 No evidence of otter was noted within woodland or hedgerows, although well-used mammal paths between the river and the ponds were recorded and these are considered highly likely to have been created by otter given the presence of other evidence. Although no evidence was noted, these habitats are considered likely to continue to provide potential opportunities for otter.

Badger

- 3.49 No badger setts or other evidence of use of the Site by this species (such as hairs, latrines or tracks) was recorded within the Site boundary during the survey. Badgers are known to be present within the wider local area, where abundant sett-building and foraging habitat is available. Given that the Site is dominated by hardstanding, it is considered to offer negligible opportunities for sett building and foraging and is considered that any badger activity on site would only comprise occasional commuting to the more favourable surrounding habitats.

Breeding Birds

- 3.50 Opportunities for birds, in terms of nesting, foraging and roosting within the Site are very limited due to the lack of vegetation within. The tree line to the west and small trees on the southern boundary offer the best opportunities for nesting, though these are considered to be limited. The Site is considered to be unsuitable for ground-nesting birds due to the dominance of hardstanding and lack of vegetation.
- 3.51 Although the proposed site is largely unsuitable for breeding birds, it was covered during the breeding bird surveys undertaken as part of survey works in the wider area and therefore a summary of relevant results is provided below.
- 3.52 The majority of bird activity recorded was that of birds flying over rather than actively utilising the Site. This included common species such as swallow *Hirundo rustica*, magpie *Pica pica*, carrion crow *Corvus corone*, jackdaw *Corvus monedula*, sparrowhawk *Accipiter nisus*, goldfinch *Carduelis carduelis* and pied wagtail *Motacilla alba*; all of which were recorded in low numbers. Birds utilising the Site comprised common and widespread species such as chaffinch *Fringilla coelebs*, robin *Erithacus rubecula*, whitethroat *Sylvia communis*, collared dove *Streptopelia decaocto* and great tit *Parus major*. These were all noted in very small numbers. No confirmed or probable breeding activity within the Site or on its boundaries was noted. No species of particular note were recorded during the surveys, the exception being a flock of 20 linnet *Carduelis cannabina*, a red listed S42 species and meadow pipit *Anthus pratensis*, an amber listed S42 species. Both species were noted only during the survey in April 2018, around the northern boundary of the Site where it joins the landfill workings. The Site does not contain suitable breeding habitat for either of these species and it is considered likely that these were birds on passage rather than already engaged in breeding activity.
- 3.53 Several barn swallows *Hirundo rustica* were noted repeatedly entering and leaving Bay 1 at the northern end of building B1 during the extended phase 1 habitat survey, and although no access was available at this time, it is considered likely that this activity represented nesting birds, or nest-building.

Reptiles

- 3.54 Although the Site offers numerous basking opportunities due to its open nature, in its current state it is considered to have very limited potential to support reptile species, with little to no sheltering or foraging opportunities available due to the lack of vegetation. The Site is also considered unsuitable for breeding and hibernating reptiles for these reasons; although some of the stored equipment associated with the landfill could offer potential hibernation opportunities, it is considered highly unlikely that reptiles would utilise these given the lack of surrounding vegetation.
- 3.55 At the time of initial extended phase 1 habitat survey, the earth mound with ephemeral vegetation at the north of the Site was considered to provide some limited opportunity for foraging and basking reptiles and the Site was therefore covered as part of the reptile surveys across the wider area in late summer and autumn 2017. No reptiles or evidence of reptiles on site was recorded during the surveys, and the closest record of a reptile provided as part of the data consultation was that of a slow worm approximately 630m to the west of the Site, beyond the river Dee which is considered to represent a significant barrier to dispersal for this species. For these reasons, it is considered unlikely that reptiles currently occupy the Site and are therefore

not considered to pose a constraint to development. They are therefore not discussed further within this report.

Other Species

- 3.56 The Site is not considered likely to support any additional protected or notable species due to the lack of vegetation and habitat structure.

4.0 DISCUSSION AND RECOMMENDATIONS

Site Proposals

- 4.1 The proposals for the Site currently comprise clearance of the vast majority of the survey area and the construction of a small number of new dwellings in a variety of styles. All dwellings are proposed to have garden/open space. Associated access and landscaping are included, with tree planting forming part of the proposals. Areas of incidental open space to the north and south may also be included within proposals. It is anticipated that the majority of trees on the boundaries of the Site will be retained, although a small section to the south may need to be removed to facilitate access to incidental open space to the south.
- 4.2 For each feature identified as a potential constraint below, mitigation options have been provided with reference to the established Mitigation Hierarchy as set out in Section 5.2 of BS42020:2013. In the first instance, this seeks to avoid impacts, then to mitigate for those impacts considered unavoidable, and finally to provide compensation recommendations where avoidance and mitigation measures are not able to rectify the effects of any residual impacts.

Statutory Designations

- 4.3 There are three internationally designated sites of importance for nature conservation within 5km of the Site. Two of these, the Johnstown Newt Sites SAC and Berwyn and South Clwyd Mountains SAC are considered to be a sufficient distance from the Site that impacts to them as a result of the proposed development are highly unlikely.
- 4.4 The remaining site is the River Dee and Bala Lake SAC (and River Dee SSSI), which is approximately 105m to the west of the development at its closest point. Due to the location and nature of the proposed development, there will be no direct impacts to the SAC/SSSI as a result of the development. However, indirect impacts in terms of run-off/pollution during the construction period are possible in the absence of appropriate working methods. This has the potential to alter water chemistry and potentially affect the aquatic plant communities that are part of the primary reason for designation. In order to prevent this, it is recommended that works are undertaken under a Construction Environmental Management Plan (CEMP).

Non-Statutory Designations

- 4.5 All of the non-statutory designated sites present within the search area are considered to be located too far from the Site to be likely to be affected during the construction or operational phases of the development.

Habitats

- 4.6 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:
- Inclusion within specific policy (e.g. PPW or site designation); and
 - Identification as a Habitat of Principal Importance (HPI) for the conservation and enhancement of biodiversity under the Environment (Wales) Act 2016 and consequently identification as a priority habitat within the relevant local Biodiversity Action Plan (BAP).
- 4.7 Under the PPW development should seek to achieve a net gain in biodiversity where possible.
- 4.8 The Site is heavily dominated by habitats that are generally considered to be of negligible conservation value (hardstanding, bare earth, introduced shrub and low-quality buildings), with only very limited amounts of more favourable habitat (i.e. scattered broad-leaved trees) present around the boundaries. None of the habitats within the Site were considered to be notable.

Scattered Broad-leaved Trees

- 4.9 Trees are generally of value as they enhance habitat structure and diversity, which benefits invertebrates and in turn foraging fauna such as birds and bats. Trees of greater age often have the greatest potential to support a wider range of invertebrates. None of the broad-leaved trees recorded, which were all towards the south-west and south of the Site, were considered to be of sufficient age to confer veteran, near veteran or even mature status. However, these trees have the potential to provide opportunities for species such as birds and invertebrates and it is recommended that they be retained where possible. If this is not feasible, replacement planting with native species, and ideally those that bear fruit or nuts, should be carried out. Lighting schemes during both the operational phase and construction works should seek to avoid illuminating trees. The root zones of retained trees should also be protected with buffer zones. These buffer zones should take account of the need to protect tree root zones, by at least a 5 metre buffer (or as determined by an arboriculturist in accordance with BS5837:2012).

Improved Grassland

- 4.10 The improved grassland at the south of the Site, which is currently grazed by sheep and has a very low species diversity is of low botanical value. This area is proposed as potential incidental open space.

Other Habitats

- 4.11 Scattered scrub and tall ruderal vegetation within the Site were very limited in extent and botanical diversity was very low. These habitats are therefore considered to be of low conservation value as they provide only very limited opportunities for fauna. Their loss is not considered to pose a significant constraint to development.
- 4.12 The scattered coniferous trees at the north of the Site are non-native and are not considered to be of any intrinsic value, although they may provide habitat for nesting birds. It is anticipated that these will be retained in order to continue to screen the existing neighbouring land use from the proposed development. The small amount of dense, introduced shrub at the south of the Site is also considered to be of negligible conservation value as it comprises non-native species; consequently its removal is not considered to pose a constraint to development.

- 4.13 The hardstanding that dominates the Site, together with the bare ground and buildings, are considered to have negligible conservation value.

Protected and/or Notable Species

Bats

Foraging and Commuting

- 4.14 The habitats on Site were considered to have negligible suitability for commuting and foraging bats due to the dominance of hardstanding, although some connectivity to much better quality habitats off site is present. Therefore, in accordance with Collins (2016)¹³ the Site as a whole has been assessed as having negligible potential to support foraging and commuting bats. Transect surveys highlighted the use of the Site by low numbers of three species of bats (Soprano pipistrelle, common pipistrelle and noctule) and this was primarily considered to be in terms of commuting to the better quality off-site habitats rather than foraging within the Site.
- 4.15 This is supported by the available static detector data which indicated a generally low and consistent level of bat activity with a maximum of 1003 registrations (during July), a minimum of 279 registrations (during September) and an average of 265 per unit over the total recording period.
- 4.16 In terms of the species of bats noted during the exercise, eight species/species groups were present: Soprano pipistrelle, common pipistrelle, noctule, *Myotis* species, contacts which could be either common or soprano pipistrelle, brown long-eared, *Nyctalus* species and lesser horseshoe. In addition around 1.3% of all registrations were social calls from an unknown species.
- 4.17 The general species assemblage was typical of the location and setting with the data dominated by common/widespread British bat species. The presence of a small number of lesser horseshoe bats is to be expected given the Site's location and this notable bat only made up less than 0.2% of total activity over the extensive recording period, which equates to only 7 registrations from over 3000. As such the off-site presence of this notable species is unlikely to be significant in terms of the proposed development.
- 4.18 Nevertheless, as good practice a sensitive lighting scheme should be employed during both the construction and operational phases to avoid impacts to commuting and foraging bats. In the first instance, lighting schemes should avoid the illumination of trees/tree lines. In accordance with best practice guidelines^{22&23} mitigation should include a combination of the following:
- Reducing height of lighting columns;
 - Placing lighting away from areas of interest;
 - Use of directional lighting;
 - Limiting lighting proposals to the minimum required;

²² Bat Conservation Trust. (2014). *Artificial lighting and wildlife – Interim Guidance: Recommendations to help minimise the impact of artificial lighting*. London: Bat Conservation Trust.

²³ Institution of Lighting Professionals. (2011). *Guidance Notes for the Reduction of Obtrusive Light GN01:2011*. Rugby: Institution of Lighting Professionals

- Having lights switched off when they are not required; and
- Use of white, rather than yellow, lighting.

Roosting

- 4.19 No bat evidence was recorded in association with any of the buildings or trees on Site and none of the trees had features suitable to support roosting bats. Therefore, there are no constraints to works to the buildings or trees as a result of the presence of roosting bats (should this be necessary) and no further survey work is required at this stage.
- 4.20 If works on site are delayed by 2 years or more, the building assessment and ground-based tree assessment will need to be repeated to ascertain whether there has been any change in their condition and subsequent suitability to support roosting bats.

Otter

- 4.21 The Site does not support otter; unlike the habitats immediately adjacent where otter presence was confirmed, including potential breeding activity. Due to its location on higher ground above the river, and the distance from the river and ponds, no habitat used by otter will be directly affected by the proposed development. It is considered possible that otter may cut across terrestrial habitats between the eastern and western extents of the river, however due to the presence of poor quality commuting habitat within and surrounding the Site, comprising hardstanding and built environment, it is likely that any over-land commuting occurs to the north of the Site within habitats to be retained.
- 4.22 Impacts to otter as a result of the proposed development are considered to be in terms of potential disturbance during the operational and construction phases of the development. This is predicted to be in terms of disturbance from residents and dog walkers using the potential incidental open space to the south, where proximity to the river is relatively close. Should such open space be included within the development (although this is unlikely given the preference for use of the landfill area), it is recommended that some form of boundary feature should be installed in order to avoid the creation of informal access to the river to reduce potential disturbance impacts. In addition, should this open space be included within proposals, it is recommended that any potential lighting scheme in this area seeks to avoid light spill towards the river and adjacent terrestrial habitats to the east and north, including the ponds which should also be retained and protected.
- 4.23 If these measures are not possible, an otter mitigation strategy to prevent disturbance may be required and this should be undertaken in consultation with Natural Resources Wales.

Badger

- 4.24 No evidence of badger presence was noted during the survey, but this is a highly mobile species which has been recorded in the local area, so there is potential for badgers to be present within the Site, even if just commuting. Consequently, the following precautionary, good practice measures (which will also serve to mitigate against potential harm to other mammals) are recommended during construction works:
- Avoiding night work where possible. If this is not possible, aim to time works so that quieter operations can be undertaken at these times;

- Covering any open trenches overnight, or providing a mammal ladder⁶ such as a plank of wood so that any animals can escape;
 - Capping open pipework overnight to prevent animals becoming stuck; and
 - Storing any chemicals, machinery and equipment in a secure compound overnight.
- 4.25 The permanent lighting measures and retention of tree lines recommended elsewhere within this report should also serve to reduce disturbance to commuting badger, and the additional tree planting within the development would also enhance the local habitat resource for this species.

Birds

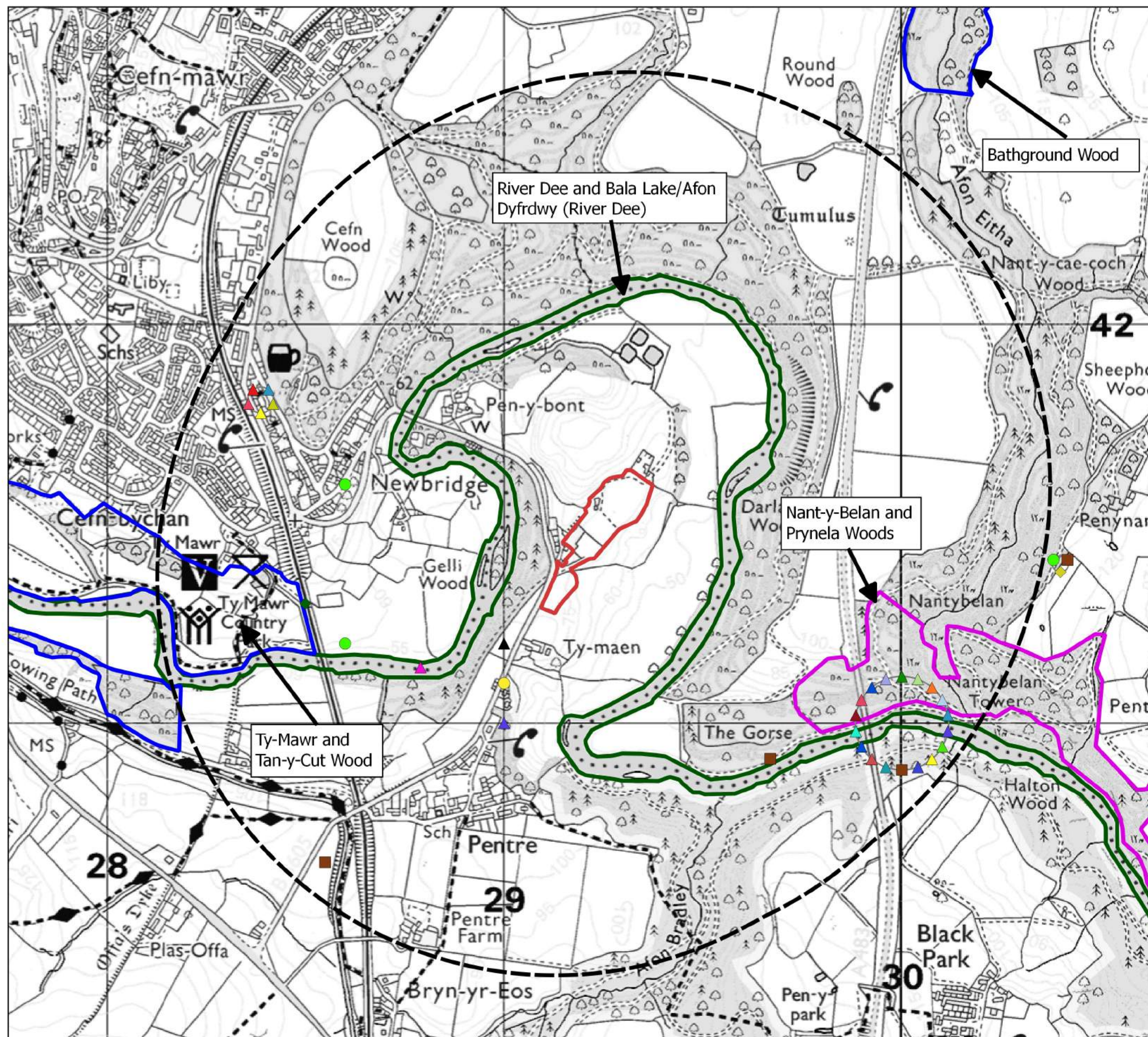
- 4.26 All bird species are protected under the Wildlife and Countryside Act 1981 (as amended), whilst they are nesting as are their nests and eggs.
- 4.27 The Site provides limited opportunities for nesting birds due to the lack of vegetative cover, with scattered trees being the most important habitat for birds. These should be retained in the first instance. Where this is not possible, any vegetation clearance works should be undertaken outside of the breeding season. If this is not feasible, works will need to be supervised by an experienced ecologist. If a nest is found, a stand-off area should be established and retained until any young have fledged. Replacement breeding habitat should also be provided, in the form of native tree or shrub planting and the provision of a range of nesting boxes.

5.0 CONCLUSIONS

- 5.1 The appraisal has identified three sites with an international nature conservation designation within 5km of the Site. Two are sufficiently distant for any likelihood of impacts from the proposed development. The third, the River Dee and Bala Lake SAC (which incorporates the River Dee SSSI), is approximately 105m from the Site and whilst no direct impact is anticipated, indirect impacts on water quality could occur in the absence of mitigation. Consequently, it is recommended that mitigation is provided via a Construction Environmental Management Plan. No impacts on other designated sites have been identified.
- 5.2 Un-vegetated hardstanding occupies most of the Site, with an area of species-poor improved grassland to the south, a few lines of relatively young broadleaved trees, a line of conifers, bare ground and tall ruderal herbs, a small area of ornamental shrubs, and a couple of buildings forming the rest of the area. None of these habitats are of nature conservation importance. Consequently, they do not represent a constraint to the proposed development, or require specific mitigation or compensation.
- 5.3 The desk study identified that a range of protected and notable species had been recorded within 1km of the Site boundary, but not within it. This reflects the greater diversity of habitats beyond the Site boundary, which are suited to support these species. In light of this, specific species survey work was undertaken both within and beyond the Site. This identified that waterbodies close to the Site do not support great crested newt and there is no suitable terrestrial habitat within the Site. The buildings within the Site have negligible potential to support roosting bats, and this is also the case for the trees on the Site boundaries. Whilst the habitats within the Site do not provide suitable foraging or commuting habitat for bats, eight species/species groups utilise the adjoining landscape for foraging and commuting. The adjacent landscape contains suitable habitat to support dormice, but none were recorded during survey work. Other targeted

surveys produced similar negative results (e.g. no records for the surveys's target species), this included reptiles, badger, and breeding birds (birds were recorded flying over the Site but not breeding within it). However, evidence of otter activity, including breeding, was recorded within the wider area, although this has no significant bearing on the proposals as the Site doesn't contain any habitats likely to be used by otter.

- 5.4 Although protected or notable species do not represent a constraint to the proposals, precautionary good practice should be adopted. For bats, this would be sensitive lighting schemes during construction and post development. A sensitive lighting scheme would also be sympathetic for otters, and a band of dense vegetation planted as part of the landscaping scheme would minimise the possibility of otters being disturbed by walkers and their dogs. During construction, open trenches and holes represent potential pit-fall traps for mammals, however, this can be avoided by ensuring these are covered overnight, or by placing something, like a plank, in the void so that animals can climb out.
- 5.5 As so much of the Site is formed by built environment (buildings and hardstanding), the new residential gardens, and the wider development landscaping will, once they have matured, result in a greater biodiversity value than that currently present. As such, the proposals will be in accordance with the PPW.



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Key

- | | |
|--|----------------|
| Site Boundary | Fieldfare |
| 1km Buffer | Grey Wagtail |
| Local Wildlife Sites (LWS) | Hen Harrier |
| Site of Special Scientific Interest (SSSI) | House Martin |
| Special Area of Conservation (SAC) | House Sparrow |
| Otter | Kestrel |
| Brown Long-eared Bat | Kingfisher |
| Unidentified Bat Species | Marsh Tit |
| Great Crested Newt | Mistle Thrush |
| Brambling | Mute Swan |
| Bullfinch | Redwing |
| Common Sandpiper | Song Thrush |
| Cuckoo | Stock Dove |
| Dipper | Willow Tit |
| Dunnock | Willow Warbler |



FCC Environment
Pen-Y-Bont Landfill,
Chirk
Desk Study and Consultation Results Plan

Scale
1:10,000

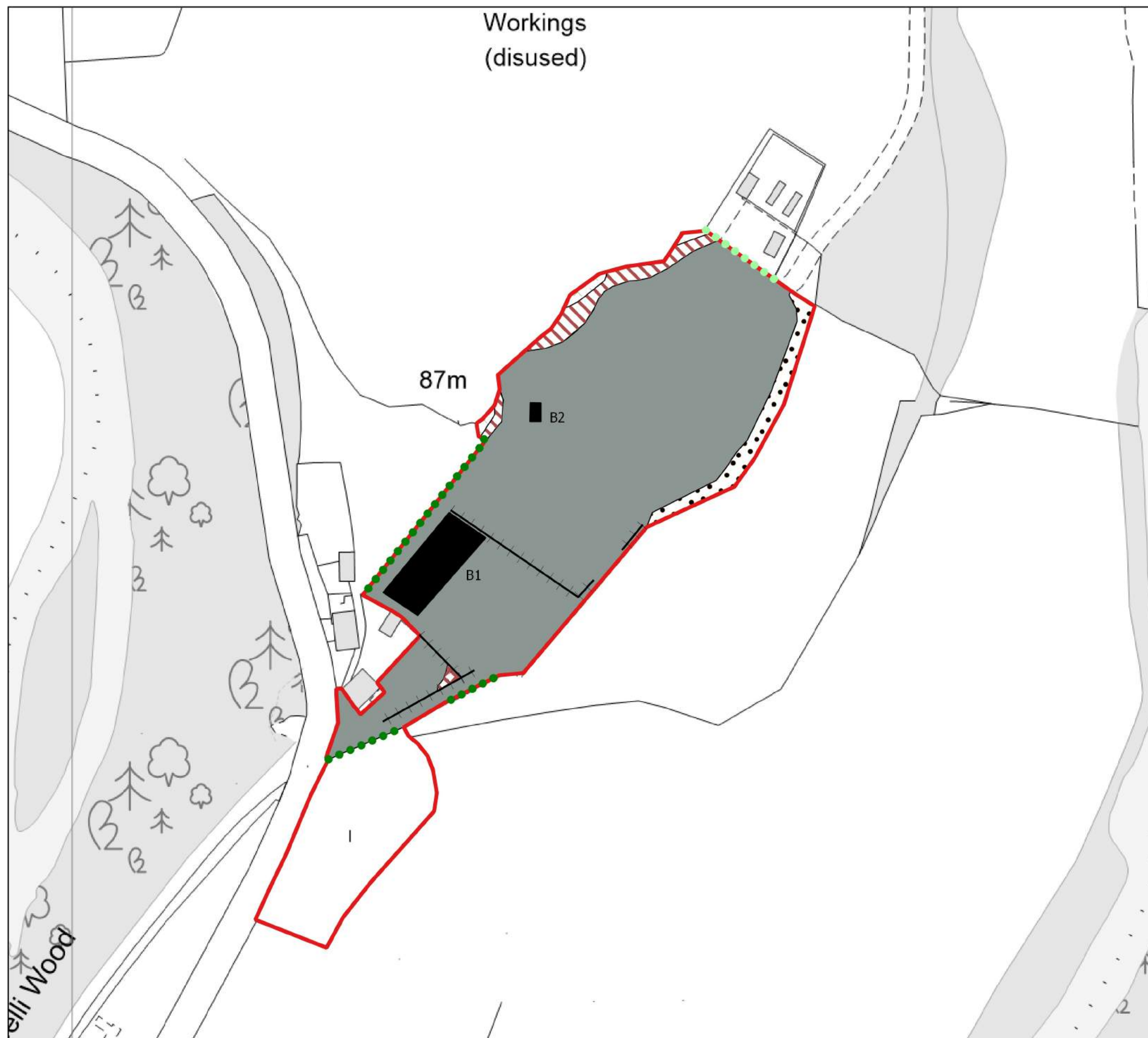
TL/EMW

15/8/2018

Figure 1

7843-E-01





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Key

-  Site Boundary updated
-  Scrub - scattered
-  Improved grassland
-  Other tall herb and fern - ruderal
-  Introduced shrub
-  Built Environment: Buildings/hardstanding
-  Buildings
-  Bare ground
-  Broadleaved trees
-  Coniferous trees
-  Fence



FCC Environment

Pen-Y-Bont Landfill,
Chirk

Phase 1 Habitat Plan

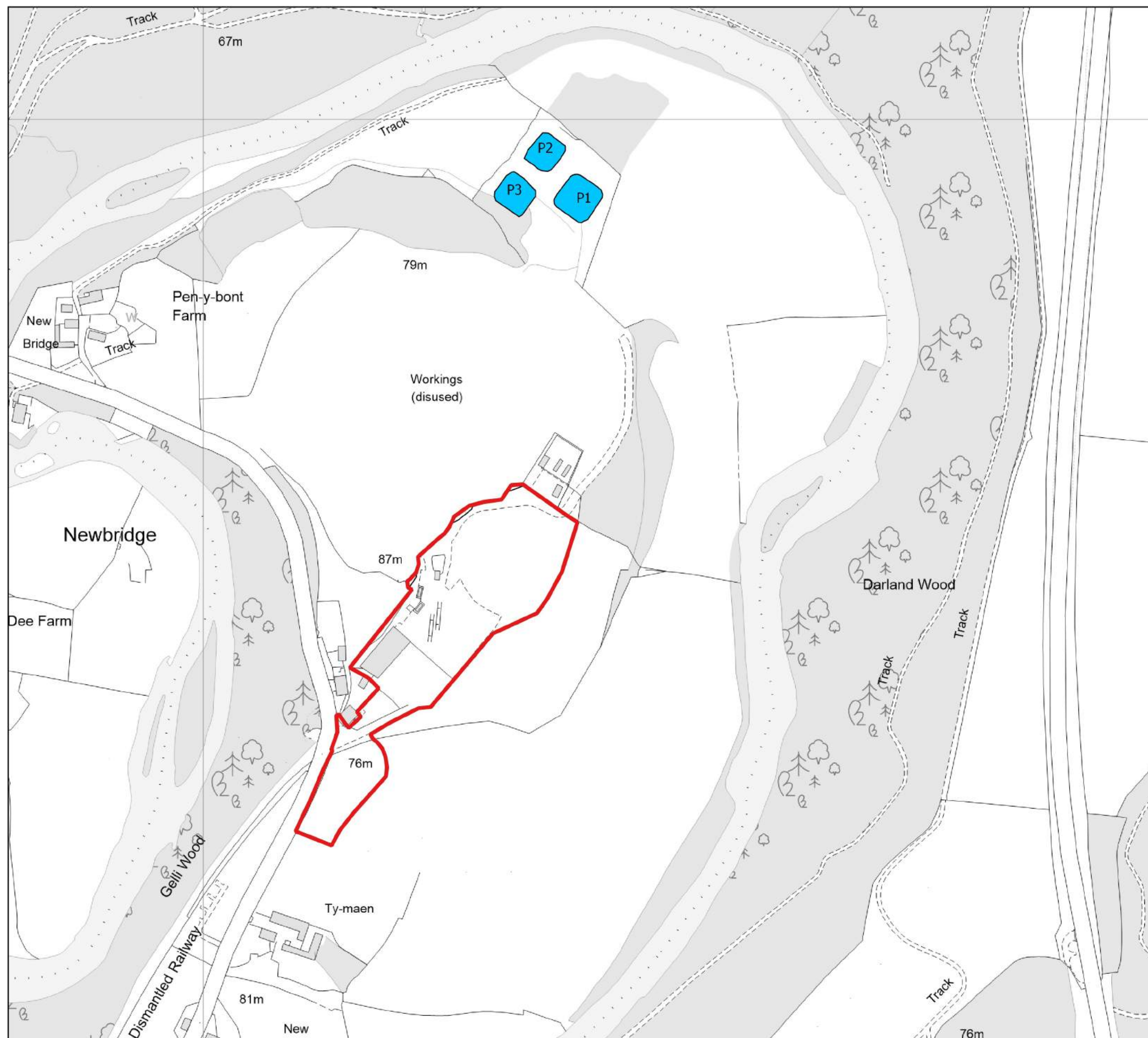
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15/8/2018

Figure 2

7843-E-02



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Key

- Site Boundary
- Ponds (with Reference)

FCC Environment
Pen-Y-Bont Landfill,
Chirk
Pond Location Plan



scale
1:3,970

TL/EMW

15/8/2018

Figure 3

7843-E-03

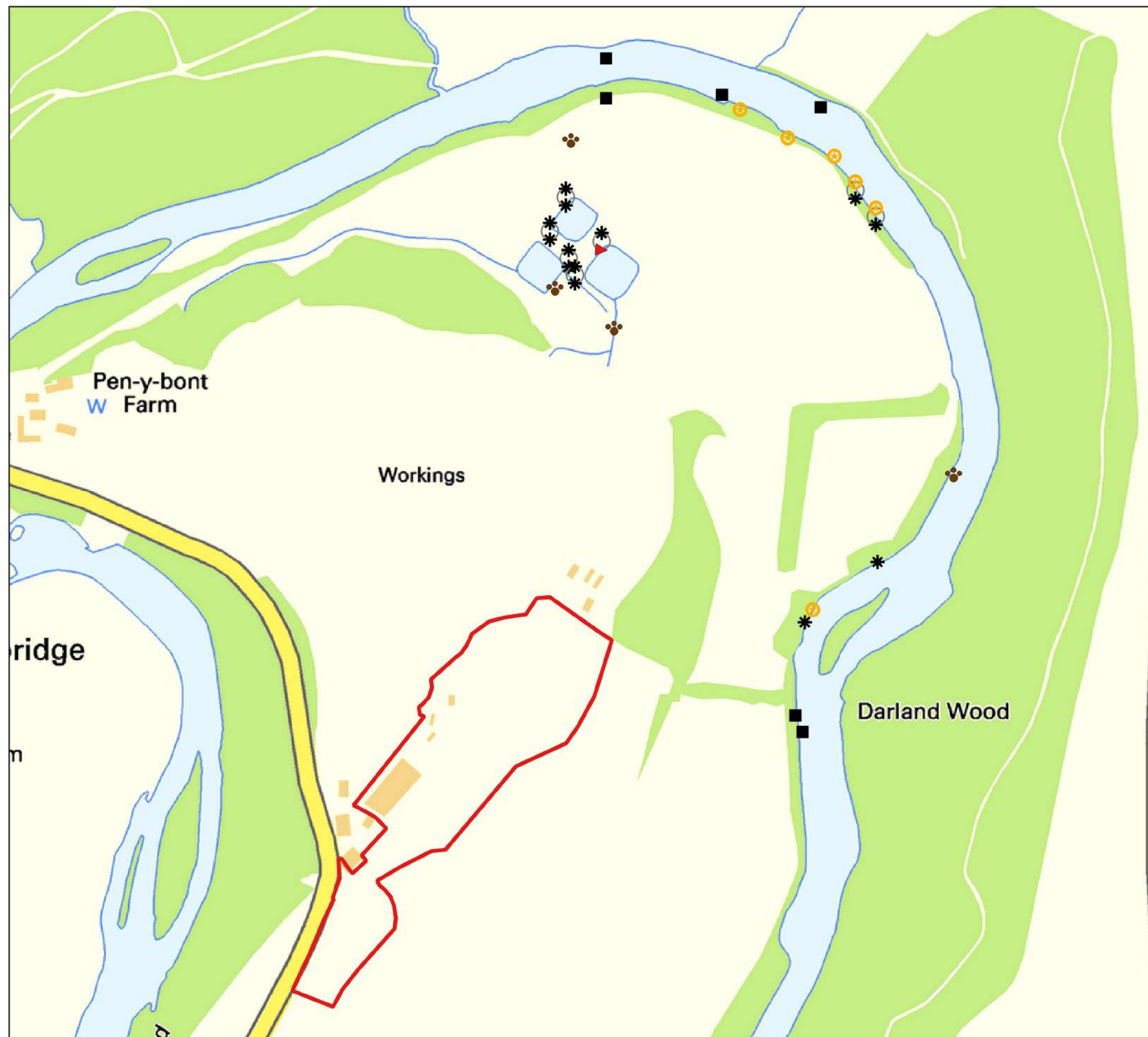


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Key

- Site Boundary
- Nest Tubes



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Key

Site Boundary

Otter Evidence

Holt

Footprints

Spraints

Couch

Slide

FCC Environment
Pen-Y-Bont Landfill,
Chirk
Otter Evidence Plan

scale
1:3,500

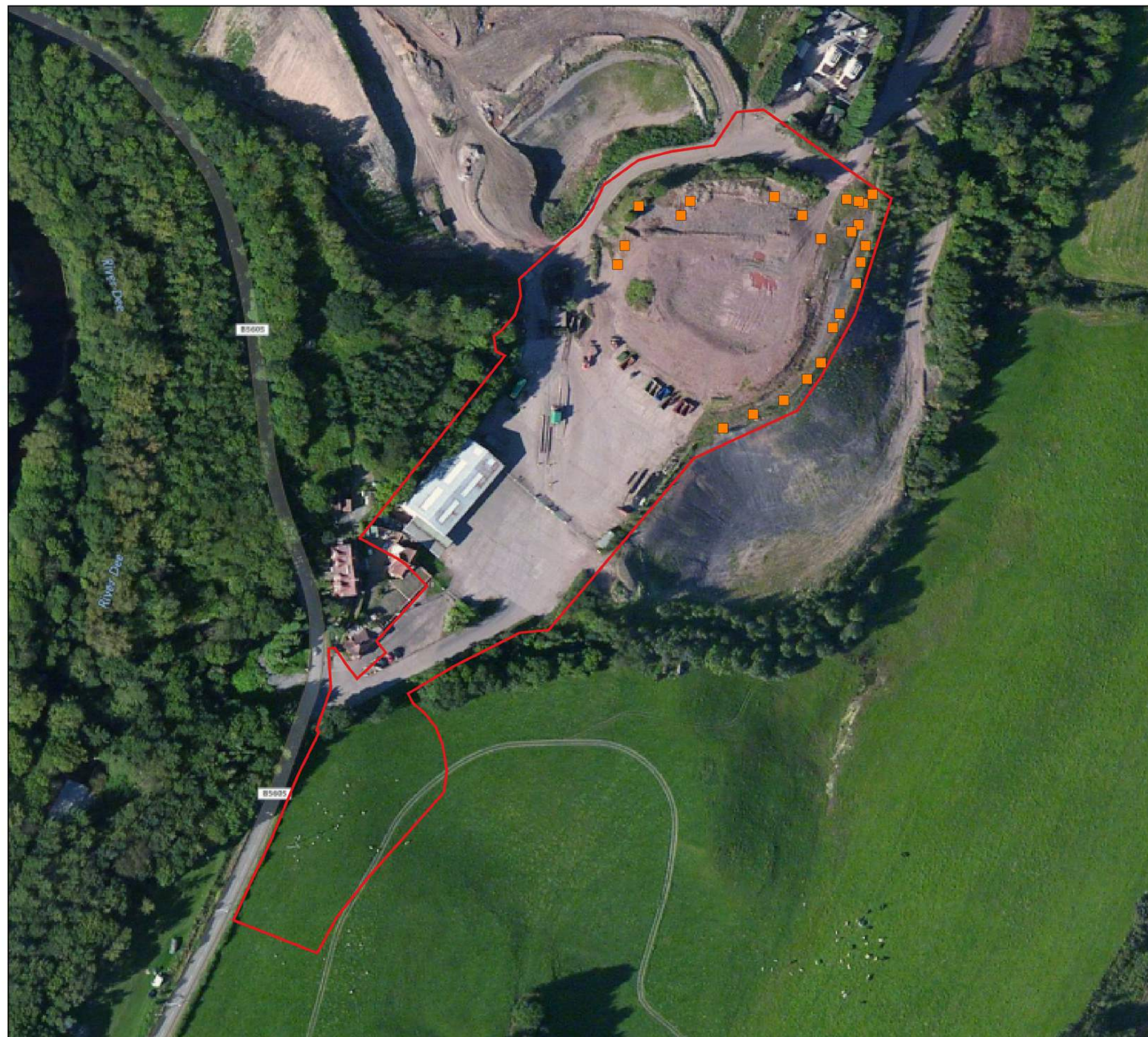
LTW/EMW

15/8/2018



Figure 5

7843-E-05



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Key

- Site Boundary
- Tin Locations

fpcr FCC Environment
Pen-Y-Bont Landfill,
Chirk
REPTILE REFUGIA LOCATION PLAN



scale
1:1,700

drawn
RJR / ERW / EMW

date
15/8/2018

drawing / figure number
Figure 6

ref
7843-E-06

Appendix A: Legislation

APPENDIX A: LEGISLATION

The Conservation of Habitats and Species Regulations 2017 (“The Habitats Regulations”)

European Protected Sites

The Habitats Regulations ratifies into UK law the “Habitats Directive” (92/43/EEC) and the “Birds Directive” (79/409/EEC). It places a duty on the Secretary of State to propose a list of sites which are important for species listed in Annex I and II of the Habitats Directive respectively to the European Commission. Once the Commission and EU Member States have agreed that the sites submitted are worthy of designation, they are identified as Sites of Community Importance (SCIs). The EU Member States must then designate these sites as Special Areas of Conservation (SACs) within six years.

The Regulations require the compilation and maintenance of a register of European sites to include SACs as well as Special Protection Areas (SPAs) designated for birds and sites designated as internationally important wetlands under the Ramsar Convention known as “Ramsar Sites”. These three designations form a collective Europe wide network of internationally protected sites known as Natura 2000. All European sites are also designated under UK law as Sites of Special Scientific Interest (SSSIs; please see below).

Habitats Regulation Assessment

There is a requirement under EU law that Member States “take measures to reach and maintain European Protected Sites” at Favourable Conservation Status (FCS). An Appropriate Assessment is required for plans or projects that may potentially damage a European Protected Site. This is based on an assessment against a given European Protected Site’s Conservation Objectives. The process is commonly known as a Habitats Regulations Assessment (HRA).

The HRA must be conducted by, or on behalf of, the Competent Authority. The HRA process assesses plans or projects alone or in combination. It involves a four stage approach as follows:

- Stage One: Screening - also known as the Test of Likely Significant Effect (TOLSE). If the Competent Authority cannot screen out a *likely significant effect*, an Appropriate Assessment is required.
- Stage Two: Appropriate Assessment - the Competent Authority will only agree to plans or projects that will not affect the *integrity* of a European site also known as the “integrity Test”
- Stage Three: Alternative Solutions - assesses any alternative solutions of a potentially damaging plan or project that failed the Integrity Test, and if it is determined there are no alternative solutions, the project cannot be agreed to and it will either need to be changed or refused.
- Stage Four: The final stage may allow a plan or project to proceed if after failing stage three if it is for Imperative Reasons of Overriding Public Interest, and only if suitable compensatory measures are secured.

Any plan or project that may have a potentially damaging effect on a transient species or the habitat on which it relies (for example bats or birds), that is both a Qualifying Features of a

European Protected Site and considered *functionally linked* with a European Protected Site, are required under law to be considered as part of any HRA process.

European Protected Species

The Habitats Regulations includes a list of animals and plant species taken from the Annex IV of the Habitats Directive that have a natural range which includes any area in Great Britain. These are collectively known as European Protected Species (EPS). The regulations make it an offence to deliberately capture, kill, disturb, take or destroy eggs of, or damage or destroy a breeding or resting place of animals listed in Schedule 2 of the Regulations, and to pick, collect, cut, uproot or destroy wild plants listed in Schedule 5 of the Regulations. All listed EPS are shown in Table 1 below. The Regulations also protect these species alive or dead and parts thereof from various forms of possession and trade.

Table 1: The Habitats Regulations Schedule 2 and Schedule 5 species

Schedule 2 – European Protected Species of Animals		Schedule 5 – European Protected Species of Plants	
Common name	Scientific name	Common name	Scientific name
Horseshoe bats ĩ all species	<i>Rhinolophidae</i>	Shore dock	<i>Rumex rupestris</i>
Bats ĩ all species	<i>Vespertilionidae</i>	Killarney fern	<i>Trichomanes speciosum</i>
Large blue butterfly	<i>Maculinea arion</i>	Early gentian	<i>Gentianella anglica</i>
Wild cat	<i>Felis silvestris</i>	Lady&-slipper	<i>Cypripedium calceolus</i>
Dolphins, porpoises and whales ĩ all species	<i>Cetacea</i>	Creeping marshwort	<i>Apium repens</i>
Hazel dormouse	<i>Muscardinus avellanarius</i>	Slender naiad	<i>Najas flexilis</i>
Pool frog	<i>Rana lessonae</i>	Fen orchid	<i>Liparis loeselii</i>
Sand lizard	<i>Lacerta agilis</i>	Floating-leaved water plantaion	<i>Luronium natans</i>
Fisher& estuarine moth	<i>Gortyna borellii lunata</i>	Yellow marsh saxifrage	<i>Saxifraga hirculus</i>
Great crested newt	<i>Triturus cristatus</i>		
Otter	<i>Lutra lutra</i>		
Lesser Whirlpool Ram&-horn snail	<i>Anisus vorticulus</i>		
Smooth snake	<i>Coronella austriaca</i>		
Sturgeon	<i>Acipenser sturio</i>		
Natterjack toad	<i>Bufo calamita</i>		

Schedule 2 – European Protected Species of Animals		Schedule 5 – European Protected Species of Plants	
Marine turtles	<i>Caretta caretta</i> <i>Chelonia mydas</i> <i>Lepidochelys kempii</i> <i>Eretmochelys imbricata</i> <i>Dermochelys coriacea</i>		

These actions may be made lawful in certain circumstances through the granting of licences by the appropriate authority (Natural Resources Wales). Licences must only be granted after the appropriate authority is satisfied that no satisfactory alternatives are available. In most circumstances, licences are only applied for and granted following full planning permission.

In determining whether or not to grant a licence Natural Resources Wales must apply the requirements of The Conservation of Habitats and Species Regulations 2012 (amendment) and, in particular, the three derogation tests:

- Test 1: A licence can be granted for the purposes of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment
- Test 2: The appropriate authority shall not grant a licence unless they are satisfied that there is no satisfactory alternative
- Test 3: The appropriate authority shall not grant a licence unless they are satisfied that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (WCA) (as amended) is the principal legislation providing protection for wildlife in the UK. It prescribes legislation for wild birds, other animals, wild plants and non-native species. In addition, it provides for the designation of Sites of Special Scientific Interest (SSSI) in Wales.

Wild birds

The Act makes it an offence (with exception to species listed in Schedule 2) to intentionally:

- kill, injure, or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

For birds listed on Schedule 1 of the Act, protection extends to offences relating to disturbance of these birds while at their nests or their dependent young.

Other animals

The WCA (as amended) makes it an offence to (subject to exceptions) intentionally or recklessly kill, injure or take wild animals listed on Schedule 5 of the Act. For some species, the protection extends to interference with places used for shelter or protection, or intentionally disturbing

animals occupying such places. These species are regarded as fully protected and as well as the EPS species listed above include the mammal species water vole *Arvicola terrestris*, pine marten *Martes martes* and red squirrel *Sciurus vulgaris* as well as selected others from a range of species groups including, fish, butterflies, hemipteran bugs, beetles, crickets, dragonflies, moths, spiders, crustaceans, sea-mats, molluscs, Annelid worms and sea anemones (and allies).

There are seven species on Schedule 5 of the Act that not fully protected but are still protected against killing and injuring these include the common reptile species slow worm *Anguis fragilis*, viviparous lizard *Lacerta vivipara*, grass snake *Natrix natrix* and adder *Vipera berus*.

The Act prohibits certain methods of killing, injuring, or taking wild animals, and numerous species are protected against sale only as well as other variations for example Atlantic stream (white-clawed) crayfish *Austropotamobius pallipes* are protected against taking and sale.

Vascular plants, bryophytes, lichens and fungi

With regards to native flora the Act makes it an offence to (subject to exceptions) intentionally pick, uproot or destroy any wild plant listed in Schedule 8. Similarly, the Act prevents the sale, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Non-native species

The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales.

Sites of Special Scientific Interest

The Act provides for the notification and confirmation of Sites of Special Scientific Interest (SSSIs). These sites can be identified for their flora, fauna, geological or physiological interest. In Wales, the power to confirm an SSSI lies with Natural Resources Wales.

Laws protecting areas designated as SSSIs are described in Sections 28 to 33 of Part 2 of the Wildlife and Countryside Act 1981 (as amended). SSSIs are the principle statutory designation of sites in the UK and offences are enforced through Natural Resources Wales. Offences include the following:

SSSI owners and occupiers

- carrying out, causing or allowing operations likely to damage an SSSI without Natural Resources Wales consent.
- failing to keep to a management notice.
- failing to let us know about a change in ownership or occupation of land in an SSSI.

Public bodies

- carrying out or authorising operations likely to damage an SSSI without meeting the requirements to notify Natural Resource Wales.
- failing to minimise any damage to an SSSI and if there is any damage, failing to restore it to its former state so far as is reasonably practical and possible.

Any person

- intentionally or recklessly damaging, destroying or disturbing any of the habitats or features of an SSSI.
- intentionally or recklessly damaging, destroying, obscuring or taking down a site notice put up on land within an SSSI.
- preventing a Natural Resources Wales officer lawfully accessing an SSSI.

Protection of Badgers Act 1992

Badgers and their setts are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from persecution by baiting and deliberate harm or injury.

The act makes it an offence to:

- intentionally capture, kill or injure a badger;
- damage, destroy or block access to their setts;
- disturb badgers in setts;
- treat a badger cruelly;
- deliberately send or intentionally allow a dog into a sett; and
- bait or dig for badgers.

A sett is defined as:

“Any structure or place that displays signs indicating current use by a badger”.

Environment (Wales) Act 2016

Section 6 of the Environment (Wales) Act 2016 imposes a duty on every public authority to maintain and enhance biodiversity in exercising its functions, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions (S6 duty). Resilience of ecosystems is accounted by the following aspects; diversity between and within ecosystems; the connections between and within ecosystems; the scale of ecosystems; the condition of ecosystems (including their structure and functioning); and the adaptability of ecosystems.

Section 7 of the Environment (Wales) Act 2016 requires the Welsh Ministers to publish a list of habitats and species that are of principal importance for the conservation and enhancement of biodiversity in Wales. The list (including 55 habitats and 560 species) has been drawn up in consultation with Natural Resource Wales and draws upon the UK BAP List of Priority Species and Habitats. The section 7 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 6 of the Environment (Wales) Act 2016.

Planning Policy Wales (2018) (PPW)

The Planning Policy Wales (2018) sets out the Welsh Government's planning policy for Wales. As such, the PPW must be a material consideration for local authorities when considering planning decisions. The following points highlight those policies/statements which particularly relate to ecology/biodiversity and the planning system:

Policy 5 – Distinctive and Natural Places

Biodiversity and Ecological Networks

5.42 The planning system has a key role to play in helping to reverse the decline in biodiversity and increasing the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement. Development plan strategies, policies and individual development proposals must take into account the need to:

- promote the conservation of biodiversity, in particular the conservation of wildlife and habitats;
- ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;
- ensure statutorily designated sites are properly protected and managed;
- safeguard protected species; and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil; and
- seek enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.

Maintaining and Enhancing Biodiversity

5.58 Planning authorities should protect and enhance biodiversity and build resilient ecological networks by ensuring that any adverse environmental effects are minimised and mitigated, by:

- ensuring that features and elements of biodiversity or green infrastructure value are retained on site wherever possible, and enhanced or created where appropriate, by adopting best practice site design and green infrastructure principles; and
- when all other options have been exhausted, and where modifications, alternative sites, conditions or obligations are not sufficient to secure beneficial environmental outcomes, offsite compensation for unavoidable damage should be sought.

Local Nature Reserves

Local Nature Reserve (LNR) is a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949.

Local authorities have the powers to acquire, declare and manage LNRs. Parish and town councils can declare LNRs providing power is given by the district or county council. LNRs may or may not have other statutory designations such as SSSI status. LNRs must be controlled by the local authority through ownership, lease or agreement with the owner. The main aim must be

to care for the natural features which make the site special. LNRs are of local, but not necessarily national, importance.

LNRs are usually owned by local authorities, with management often passed onto other organisations such as County Wildlife Trusts etc. They often have good public access and facilities. There is no legal necessity to manage an LNR to any set standard but management agreements and plans often exist. Protection of LNRs is usually provided through local planning policy and through local bylaws.

Non-Statutory Protected Local Sites

Non-statutory Designated Sites are sites designated by local authorities which fall outside the statutory criteria for designation. They are policy protected and included in the Planning Policy Wales (PPW). Local Planning Authorities should set criteria based policies against which proposals for developments on or affecting protected wildlife sites should be judged. Non-statutory sites are given various names including County Wildlife Sites (CWS), Sites of Importance for Nature Conservation (SINC) and Local Wildlife Sites (LWS). A search of the Ancient Woodland Inventory is also included here.

Hedgerows

Hedgerows are designated as Habitats of Principal Importance under the Environment (Wales) Act 2016. The Planning Policy Wales (PPW) emphasises the preservation, restoration and re-creation of priority habitats and ecological networks. Hedgerows are important components of ecological networks linking other important habitats and designated sites.

Hedgerows also receive statutory protection under the Hedgerow Regulations 1997 made under Section 97 of the Environment Act 1995, which came into force in 1997. The regulations introduced new arrangements for local planning authorities in England and Wales to protect important hedgerows in the countryside, by controlling their removal through a system of notification. Important hedgerows are defined by complex assessment criteria, which draw on biodiversity features, historical context and the landscape value of the hedgerow.

Local Biodiversity Action Plan (LBAP)

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local Government organisations and conservation charities.

Birds of Conservation Concern (BoCC)

The Birds of Conservation Concern (BoCC) is jointly prepared by the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and The Royal Society for the Protection of Birds (RSPB).

The report classifies birds according to the extent that they are known to be declining. The classifications are split into groups, Red, Amber and Green, with species classified as Red being those with the greatest declines. The criteria for classifications are presented in *Table 2*.

Table 2: BoCC species classification criteria

Red List Criteria	Amber List Criteria	Green List Criteria
Global Conservation Status - Species listed by BirdLife International as being Globally Threatened using IUCN criteria.	European Conservation status - Categorised as a Species of European Conservation Concern.	All regularly occurring species that do not qualify under any of the red or amber criteria are green listed.
Historical Decline - A severe decline in the UK between 1800 and 1995, without substantial recent recovery.	Historical Decline ï Recovery - Red listed for Historical Decline in a previous review but with substantial recent recovery (more than doubled in the last 25 years).	Includes those species listed as recovering from Historical Decline in the last review that have continued to recover and do not qualify under any of the other criteria.
Breeding Population Decline - Severe decline in the UK breeding population size, of more than 50%, over 25 years or the entire period used for assessments since the first BoCC review, starting in 1969 (longer-term).	Breeding Population Decline - As for red list criteria and, but with moderate decline (by more than 25% but less than 50%).	
Non-breeding Population Decline - Severe decline in the UK non-breeding population size, of more than 50%, over 25 years or the longer-term.	Non-breeding Population Decline - As for red list criteria and, but with moderate decline (by more than 25% but less than 50%).	
Breeding Range Decline - Severe decline in the UK range, of more than 50%, as measured by number of 10 km squares occupied by breeding birds, over 25 years or the longer-term.	Breeding Range Decline - As for red list criteria and, but with moderate decline (by more than 25% but less than 50%).	
	Rarity - UK breeding population of less than 300 pairs, or non-breeding population of less than 900 individuals.	
	Localisation - At least 50% of the UK breeding or non-breeding population found in 10 or fewer sites.	
	International Importance - At least 20% of the European breeding or non-breeding population found in the UK.	

Appendix B: Proposal Plans

